THE BUILDER

A JOURNAL FOR THE ARCHITECT AND CONSTRUCTOR.

WITH WHICH IS INCORPORATED "THE BRITISH ARCHITECT."

VOL. CXXIX.—No. 4,312 SEPTEMBER 25, 1925.

A PROPAGANDA COMMITTEE?

THE urgent necessity of architectural propaganda is by now so fully recognised in the profession that there is no need to advance further arguments in its favour. At present we all realise that something ought to be done to bring the art into closer relationship with modern life, but we have only hazy ideas of what form action ought to take. In the first place we know that infinitely more attention is drawn to a new play that may run a few weeks or months than to a new cathedral, and that a novel will always take precedence of a building. This is obviously undesirable, but can we do anything to remedy it? Then, again, public architectural functions are always inadequatel, reported in the lay Press, if, indeed, they are mentioned at all; an instance in point being Mr. Ramsay MacDonald's recent speech at Liverpool which was condensed to nearly nothing in the lay Press.

The lack of books dealing in a popular way with modern architecture is gradually being made good and these are certain to bear fruit in time, but it is astonishing how little effect they have as yet produced upon that section of the public that in other respects we should call educated. Then, again, there is the education problem. Is a man always to be considered completely educated because he has spent three years at a private school, five at a public school, and three or perhaps four at an ancient university, and at the end of these twelve years has never been given one half-hour's instruction in architecture?

Then there exist the local engineer and surveyor, and the speculative builder. When these have a slight acquaintance with architectural principles they can avoid the pitfalls and blatant errors that otherwise are certain to catch them. Their own knowledge of design may be insufficient to turn them into architects, but at least they know when and where to go for advice and guidance. Local authorities' surveyors have had some grounding in the principles of lay-out and cottage design through the Government scheme, but surveyors are constantly changing, and we should be deluding ourselves if we supposed that the Addison scheme had produced the permanent effect we should desire among them. The town-planning schemes may effect more.

As regards the speculative builder, his output has noticeably improved in some places, but in others no improvement is visible. Instead of advancing as an organised body, which they are, speculative builders seem to be hardly influenced at all by any general endeavour to improve their architecture. Architects themselves have undoubtedly improved as a body, and those that are properly qualified can as a rule be relied on to produce work of a reasonable standard; this is all to the good. but it is less inspiriting when we remember that they design considerably less than half the buildings that are erected every year.

There is a general improvement, but it is far too slow, and every bad building that is put up represents a permanent black mark. In order to minimise the number of these black marks architectural propaganda must itself be organised, since nothing can be accomplished without some directing control. We need not fear that organisation is in any way contradictory to the interests of true art. Richard Wagner's great venture at Bayreuth demanded a great deal of organisation, and in our own day Miss Lilian Bayliss has worked miracles of art propaganda through the organisation of the Old Vic. There are so many ways in which architectural propaganda might be put on an efficient footing that we take the following points almost at random, as ideals that should be aimed at:—

1. That architectural correspondents should occupy a position on the great daily papers such as that at present reserved for the other arts.

2. That architecture should take its place in general education in schools and universities.

3. That a knowledge of architectural elements should form one of the qualifications for surveyors to local authorities.

4. That the speculative builder should be urged to study the architecture of housing—preferably through his own organisation.

We may readily admit that some of the above points may be difficult to put into effect, but they certainly are all desirable, and there exists no authority responsible for taking steps to bring about reforms of this kind. The only criticism that could come from within the ranks of the profession would arise through a confusion between architectural propaganda and architects' propaganda, which is quite a different thing. The difference might be illustrated by considering the speculative builder. There are two ways in which his work might be improved: (*a*) By self-education through a study of cottage and house design, so that he would know enough to avoid bad mistakes and to build tolerable houses; (*b*) he might consult or employ an architect. The first alternative might in the long run be the best for architecture, while the second would clearly be the best for architects. Neither of them may be feasible *in toto*, but between them these expedients might bring some relief to our suburbs of to-morrow. If we place architecture first and architects second it may well be necessary to call for some sacrifices on the part of architects, and any confusion between architectural propaganda and personal advertisement would be as harmful to architecture as would be a public impression that architects were forming themselves into a trade union and tying up their art in red tape.

There is at present no one whose business it is to see to reforms of the kind suggested here concerned with the advancement of architecture as a cog in the life of the community, and something in the nature of an official architectural propaganda committee would seem to be necessary. It would act as a kind of "Press Bureau," and see that the daily papers were supplied with information of interest, copies of speeches papers, &c., from which they could extract what they wanted. It could arrange for courses of lectures, articles, and provide slides and photographs with a view to bringing architecture before the public; it could, in fact, see generally that architecture was not left so completely unrepresented in ordinary life as it is at the present moment. The profession is at last under one supreme control, and this should be the ideal moment for architecture to put herself right with the public, and if architects do not do it no one else can undertake the task.

NOTES.

Industrial Agreements. UNANIMITY between employers and employed must necessarily be the basis of any industrial agreement affecting a trade throughout the whole of the country. This has been the outstanding lesson of the history of trade unionism, the whole object of which is, in fact, to get improved conditions for the workers by collective bargaining. Sectional agreements have not only invariably failed to be effective, but have generally resulted in embroiling larger areas in disputes brought about by their failure. Facts such as these are patent to all. And yet we find the National Federation of Building Trades Operatives, who do not now represent anything like the whole of the building trade workers, expecting the building trade employers to ratify a national agreement with them alone. It is difficult to understand the attitude of the Federation in expecting the employers to conclude a national wages agreement which does not include such important sections of the operatives as the bricklayers, plasterers, and masons, who seceded from the national body some months ago. Surely the Federation must know that no satisfactory and lasting agreement can be reached before they overcome their own internal dissensions and all branches are again represented by one body? One cannot help wondering whether the present position is being created with a view to forcing the secessionists back into the National Federation; and, if so, whether a policy which may involve the whole building industry in another serious dispute is a justifiable method of settling what, after all, are the domestic troubles of the operatives.

Heating and Cooling. DURING the spell of hot weather last July we came across an interesting experiment in a large London office building. The building in question was fitted with a heating installation on the panel system, which gave all the warmth necessary in the winter, but during the hot spell open windows and fans were not sufficient to keep the occupants cool. In spite of the sweltering weather, one of the staff had enough energy to think over the problem, and conceived the idea of running cold water through the heating installation. This was done, the temperature of the water from the mains being still further lowered by passing it through an ice chamber before it entered the circulation system. The result was quite satisfactory, and on commenting on the comfortable atmosphere we were told that it was entirely due to making use of the heating installation for cooling purposes.

Words of Wisdom. IT would be well if the wise words of counsel which do occasionally drop from the mouths of speakers could meet with a sympathetic response. For instance, in the address by Mr. Thomas Barron, at the annual Conference of the National Federation of Building Trades Operatives, there were many appearances of reasonable argument, and it is worth noting that he said "if the workers in the building industry believed what they said when they declared that they could run the industry without the employers, they should seek to equip themselves for the task."

The Sculptured Frieze of East India House. WE illustrate this week some details of the remarkable sculptured frieze on East India House, Regent-street, designed by the late Edwin T. Hall, F.R.I.B.A., and Mr. E. Stanley Hall, F.R.I.B.A., and carried out by Mr. Charles L. J. Doman, A.R.B.S., and Mr. Thomas J. Clapperton, A.R.B.S. Measuring as it does 115 ft. long by 8 ft. in height, it is the largest sculptured work in London, and it was considered too big a task for one sculptor, if the work was to be ready for the completed building. Mr. Doman, therefore, took on the central bay, with two bays to the north and one to the south of the centre, and Mr. Clapperton was responsible for the two outer northern and the three southern bays. The subject of the frieze is the transport of merchandise from the East and West to the Mother Country, typified by the central figure of Britannia with shield and trident. At either ends are ships signifying the distant seas; a Western ship at the north end, and a Chinese junk at the south. A Chinaman squats on his haunches at the dock side, while coolies load the junk with silks and cases of ivories. A dock policeman superintends. In the next panel to the junk, two camels are seen taking up their loads of carpets from the Orient. Behind them a potter works at his wheel, and a woman, with her baby on her hip, walks off with a finished pot on her head. The third panel shows a proud lady of Georgia scorning the working girl at her feet, her own head protected from the sun by a feather fan. An Egyptian woman directs the packing of bales of goods. In the fourth panel an elephant kneels to receive his load of merchandise, while a Moham-

Detail of Sculptured Frieze on East India House, Regent-street, London. *(See also p. 453.)*

Detail of Sculptured Frieze on East India House.

medan woman swings by, trousered, and basket on hip. In the panel next to the Western ship at the north end of the frieze is depicted the making of porcelain. The venerable master examines the finished piece, and the apprentice stands by. The remaining two panels on the north side show a laden cart drawn by two horses; fresh bales of goods are being made ready in the group behind. From over the top of the frieze three spectators in stone watch the procession below—a girl by herself on the left, and a lover and his lass on the right. This idea of the spectators was Mr. Hall's special wish, following a suggestion in a picture of Raphael's; and it is extraordinary what life and animation the fact of these three spectators seems to give to the whole conception of the frieze. Messrs. Doman and Clapperton started on their models in April, 1923. By August, 1923, the quarter full-size models were completed. The half full-size models were finished in November, 1923, and all the full-size models in March, 1924. The work was then entrusted to Mr. G. Hardie and his sons at their yard in Shepherd's Bush, and here the whole frieze was chiselled and built up to completion. The finished sculpture was moved to East India House in August, 1925, and the whole frieze was completely erected in 14 days. It contains nearly 200 tons of the best bed of Portland stone.

Style and New College Buildings.

It will not be without significance that, in the conditions issued for the new Collegiate Buildings for Mossley-hill, Liverpool, there is no mention of style. The assessor, Sir Giles Gilbert Scott, evidently thinks it best to leave intending competitors free on this point, and we feel this is the right view.

Students' Drawings.

A very large number of students' drawings are on view at the Institute Galleries this week, indicating the work which has secured exemption for their authors in the Institute Intermediate and Final Examinations. There is a large amount of creditable work, but the Gothic designs are much below the quality we used to see thirty years ago. The following may be mentioned:—London University: Jutland Memorial, by Ph. Pattrey; Dairy Farm, by Guy Morgan; design for First-class lounge on steamship *Franconia*, by T. R. Alabaster, Glasgow; a good classic design for a School of Architecture, by L. C. Farquhar. Architectural Association: Open-air theatre, by Doris H. Lewis; Municipal Market, by L. Sivotkin; an Hotel in Mayfair, by — Walker; Headland Hotel, Miss Sleigh. Liverpool School: Memorial Buildings on an Island, by A. G. Phillips; University School of the Theatre, by H. L. Barton; Faculty of Architecture Building, by Miss Thelma Silcock; Bank and Office Building, by H. Thearle. There are some clever drawings from the Bombay School of Art.

The Leverhulme Sale.

There seems no reason to doubt that Lord Leverhulme's trustees will find a better result from the sale of his treasures in New York than in London, but it is perhaps a little unfortunate that the change of the sale from London to New York could not have been foreseen earlier; any possible buyers coming over for the sale might even now be crossing the seas, and the sale of catalogues must have been largely influenced by the belief that they described things to be bought in London. The inflation of prices by the competition of wealthy buyers will in few cases survive the test of time.

Rent Strikes.

We notice that certain Labour representatives on the West Ham Board of Guardians are advocating the stoppage of rent allowance from the relief paid by them to the unemployed. The Ministry of Health demurs at the huge total paid in this way, so the landlord is told he must suffer so that other forms of relief may not be curtailed. Why is the landlord always looked upon as the first person to be defrauded, and not the baker or the grocer? Presumably because the houses are already in the possession of the tenants, and to refuse payment for what you are enjoying does not appear to some minds such an unlawful act as to take goods by force.

Detail of Sculptured Frieze on East India House.

GENERAL NEWS

Change of Address.

Mr. W. J. Fitt, L.R.I.B.A., has transferred his office from No. 11, Bolton-street, Piccadilly, to 126, Bishopsgate, E.C.2.

Mr. H. C. Hughes has moved his office to No. 1, Tunwell's-court, Trumpington-street, Cambridge. Telephone as before—Cambridge: 184.

Dissolution of Partnership

The partnership subsisting between Mr. G. A. Boswell, F.R.I.B.A., and Mr. L. R. Guthrie, F.R.I.B.A., at 37, Bruton-street, London, W., has been dissolved by mutual consent as from August 31, 1925.

Manchester Housing Scheme.

The Manchester Town Council are thinking of throwing out a "satellite town" in the direction of Cheshire, instead of building the usual endless suburbs.

Proposed Horticultural Hall.

Lord Lambourne states that a larger hall will be built for the Royal Horticultural Society on the present premises; it will contain 20,000 ft. of exhibition space, and is to be designed by Messrs. Easton & Robertson.

St. Mary Abbot's Hospital.

The Kensington Guardians have received a letter from the Minister of Health sanctioning a scheme (at first turned down owing to the difficulty of finding labour) for the erection of a new nurses' home at St. Mary Abbot's Hospital.

York House, Twickenham.

York House, in Richmond-road, Twickenham, a famous Queen Anne mansion, is being converted into a town hall, three public halls and a swimming bath being provided; the grounds will become a public park.

Ashtead Forest Excavations.

Interesting discoveries continue to be made during the work of excavating on the Roman site in Ashtead Forest. Articles recently found include tiles showing deer and hounds in relief; pots with stags in relief; and Samian pottery with egg and dart moulding.

New London Cinema.

Mr. F. G. M. Chancellor is collaborating with Mr. Thomas W. Lamb in designing the picture house to be erected on the site of the Empire Theatre in Leicester-square. It is planned on American lines similar to the Capitol Theatre of New York, and will seat 3,500.

Limerick Dock Extensions.

A sum of £150,000 has been guaranteed under the Free State New Trade Loan Act for the extension of the docks at Limerick and the construction of a western entrance. The work is likely to be undertaken by Messrs. Siemens Schuckert.

Proposed Beet Sugar Factories.

Lord Weir, at the first annual meeting of the Anglo-Scottish Beet Sugar Corporation, announced the constitution of a second Anglo-Scottish Beet Sugar Corporation, which will build three new factories—one of them at Cupar, Scotland—within the next twelve months. An expenditure of a million pounds is involved.

Factory and Workshop Act.

We have received a revised draft of the regulations made by the Secretary of State under Section 79 of the Factory and Workshop Act, 1901, in respect of certain building operations, embodying a number of substantial modifications of the original proposals. Copies may be obtained on application to the Factory Dept., Home Office, London, S.W.1.

New Nottingham Power Station.

The first section of the new electric power station of the Nottingham Corporation, which has an installed capacity of 30,000 kilowatts and cost £685,000, was opened recently. The demand for current is so great, however, that extensions are already in progress which will increase the output to 50,000 kilowatts and the cost to over £1,000,000.

Architects' Estates.

Mr. Alexander Brown, architect, of Aberdeen, who died last April, left personal estate in Great Britain valued at £8,561.

Mr. Charles Wardman Rollinson, of Chesterfield, late of Messrs. Rollinson & Son, architects and surveyors, Chesterfield, left estate of the gross value of £14,016, with net personalty £11,487.

Proposed Nottingham Schemes.

No opposition was forthcoming at the Nottingham Guildhall when the Ministry of Health inquired into the Corporation's application for sanction to the borrowing of £504,000 for the new Exchange. Mr. T. C. Howitt is the architect for the proposed Exchange, which is to be a Portland-stone-concrete-steel building. A £750,000 sewage scheme is soon to be put before the Ministry.

Harrogate's New Pavilion.

The plans for a new pavilion, seating 800 people, to be erected in the Valley Gardens at Harrogate, have been prepared by the Deputy Borough Engineer, Mr. F. H. Clarke, A.R.I.B.A., and provide for a central domed hall, a rostrum, refreshment rooms, &c.; the architecture of the pavilion will be Roman Doric. The building will be carried out in white stone at an estimated cost of £21,000.

Manchester Art Gallery Committee.

The Manchester City Council has handed over Platt Hall, which was threatened with demolition, to the Art Galleries Committee, who will adapt it as a gallery and museum at a cost of £4,500.

The Manchester Art Gallery Committee has accepted, subject to the consent of the City Council, a collection of *objets d'art* from Mr. C. L. Rutherson, of Bradford, consisting of 50 oil paintings, including the work of Augustus John and others of the modern school; 400 water-colours and drawings by Max Beerbohm, Muirhead Bone, and others; 40 woodcuts by such modern masters as John Nash, Eric Gill, and Gordon Craig; and bronzes and stone carvings by Epstein, Mestrovic and others.

EXHIBITION.

An exhibition which touches the world of artistic effort at various points is that being arranged in the galleries of the Royal Institute of British Architects to open next Thursday. It will include the world of Mr. Reginald Hallward in pictures, glass design, pottery, needlework, and decorative and pictorial work generally, even to a nursery corner. Mr. Hallward is a refined and sensitive artist of a catholic temperament, which enables him to cover a wide field of artistic production. He is an able craftsman, happily endowed with poetic ideals, and his work appeals to varied sympathies. Mr. Hallward's work is seldom seen in exhibitions because so much work has been done directly for its place in churches and other buildings, and therefore the wide extent of it is little known to the public, who will have the opportunity in this exhibition of studying this work on a representative scale, and of demonstrating the value of craftsmanship where the artist is executant as well as designer. Several owners are lending pictures for the exhibition. The exhibition can be made of much interest and value if an effort were made to get visits of students from the architectural and L.C.C. schools to visit the exhibition. It does seem a pity after so much effort has been expended in getting together exhibitions which involve so much thought and labour, that they should fall short of their most valuable mission. We fear that too many go to exhibitions largely for the pleasure of criticising and discounting their merits; the young amongst us are more generous and more ready to be influenced by work which reveals the right methods of production.

COMPETITION NEWS

New Hospital, South Moor-lane, Hemsworth.

Designs by Messrs. Garside & Pennington, F.R.I.B.A., of Ropergate, Pontefract, have been accepted by the Hemsworth and South Kirkby Miners' Welfare Committee for the erection of a new hospital on a site adjoining South Moor-lane, Hemsworth. The scheme is to cost some £30,000, and is to be proceeded with forthwith.

Portstewart Club Houses.

The Council of the Portstewart Golf Club invite architects to submit plans for two new club houses to be erected at the old and new links respectively. Full particulars may be had on application to the Secretary, Mr. P. H. Blaikie, Portstewart. No remuneration will be paid except for such designs as the Council may decide to use.

[This competition will doubtless receive attention by the R.I.B.A.]

Competitions Open.

	Particulars published in "Builder."	Sending in date.
Drammen Bridge (Drammenselven). Premiums: 10,000 Norwegian crns., 8,000, 6,000. Apply Gov. Eng., Drammen..	May 29 ..	Oct. 1
Newcastle Fire and Police Station. Premiums: £500, £300, £100. Mr. P. S. Worthington, F.R.I.B.A., Assessor..	June 12 ..	Nov. 9
Town Hall, &c., Pretoria. Open to architects residing in South Africa or Registered under Architects' Act, of 1909, Transvaal. Assessor to be appointed by R.I.B.A. Premiums: £250, £150, £100..	—— ..	Nov. 30
Argentine Institute. Premiums 10,000, 6,000, 4,000, 3,000, 2,000 gold pesos. Apply partics., 35, Old Queen-street, S.W.1	April 24 ..	Dec. 31
New Buildings for Liverpool College, Mossley Hill. Sir Giles Gilbert Scott, R.A., Assessor. Premiums: £500, £300 and £200. Apply to J. H. Lintern, Secretary, Liverpool College, Sefton Park-road, Liverpool	Aug 7 ..	1926, Jan.
Australian War Memorial, Canberra. Open to architects of Australian birth. Apply High Commissioner, Australia House, Strand, London	Aug. 14 ..	Mar. 31
Plan for construction of Conference Hall, for League of Nations, Geneva. International Competition, Sir John Burnet being British representative on Jury of Assessors. 100,000 Swiss francs to be divided among architects submitting best plans. Programmes will be deposited in due course with R.I.B.A., 9, Conduit-street, where intending competitors should apply. Single copies from Secretary-General, League of Nations, Geneva, on payment of 20 Swiss francs.	Jan. 2 ..	—

* Competitions when "warned" or vetoed by the R.I.B.A. are Starred.

Bramber Castle.

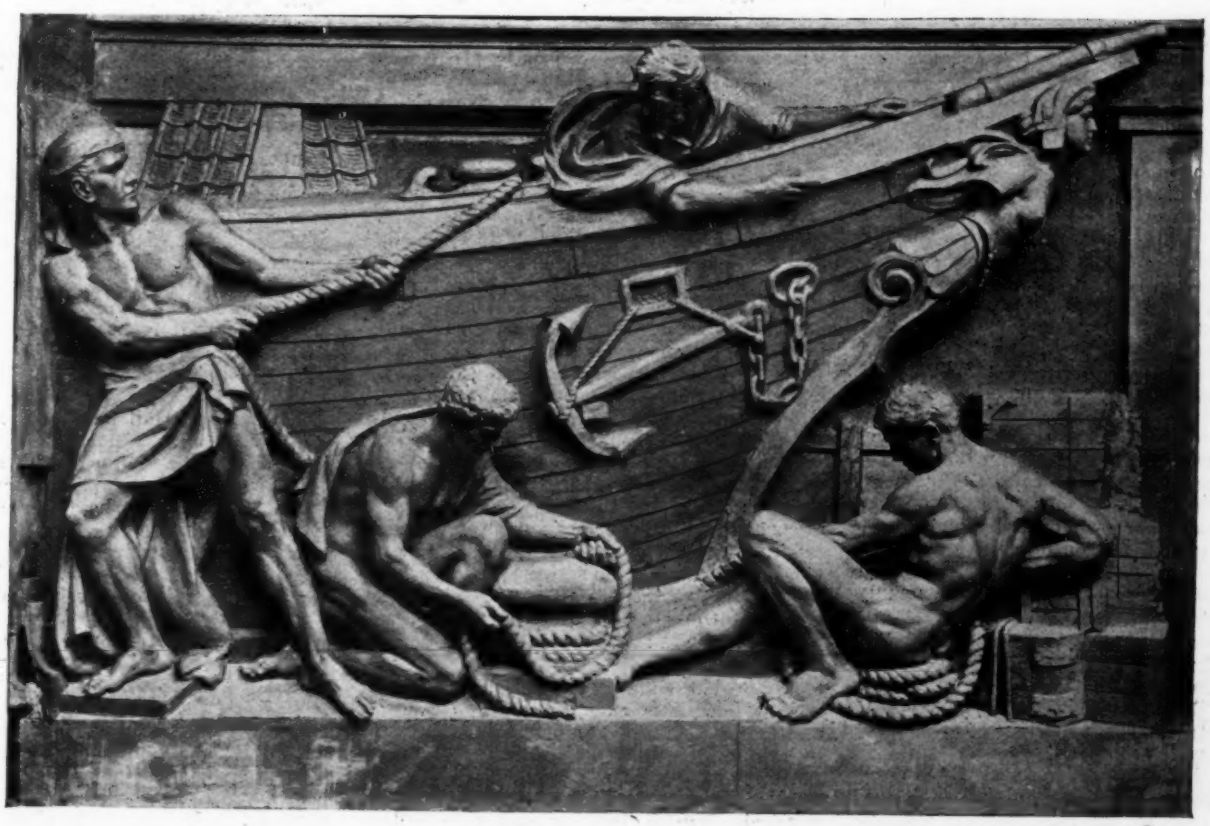
Bramber Castle, built in the eleventh century, and now a ruin, was sold recently by the Duke of Norfolk for £3,000.

Roman Pottery at Bermondsey.

Specimens of Roman pottery have been found during the excavation of the site of the new baths and washhouses at Grange-road, Bermondsey. The chief specimen is a cinerary urn in perfect condition, dating from the later period of the Roman occupation.

Obituary.

Mr. Paul Bartlett, the American sculptor, has died, after a short illness, at his studio in Paris, at the age of 59. Mr. Bartlett was the creator of the fine equestrian statue of Lafayette which adorns the space between the three main palaces of the Louvre at the end of the Jardin des Tuileries. His equestrian statue of Washington is in the Place d'Jena. Another of his statues of Lafayette has been unveiled at Metz since the war. His other notable works include the statue of Blackstone in the great Hall of the Law Courts in the Strand.



Details of the Sculptured Frieze of East India House, Regent-street, London. (*See p.* 450.)

The Late EDWIN T. HALL and MR. E. STANLEY HALL, F.R.I.B.A., Architects.

MR. CHARLES L. J. DOMAN, A.R.B.S., and MR. THOMAS J. CLAPPERTON, A.R.B.S., Sculptors.

THE PRESERVATION OF ST. PAUL'S

CATHEDRAL AND OTHER FAMOUS BUILDINGS

By W. A. FORSYTH, F.R.I.B.A.

POPULAR interest in the value of ancient buildings will receive stimulus from Mr. W. Harvey's recent publication, "The Preservation of St. Paul's Cathedral and Other Famous Buildings"* and at the same time it will take a useful place in the scanty literature of English architecture dealing with methods of repair of historic structures. The subject is approached in a bold manner, however, being in effect a treatise upon "The new science of conservation," and appears at an opportune moment when so much preservation of buildings is in the air. The theme is centred upon the one building of St. Paul's Cathedral, with occasional reference to certain others, mainly in a ruinous state. Sound criticism is directed to the doubtful methods now in course of application, and there are valuable chapters on diagnosis, by no means complete, however, followed by an attractive series of suggestions for "scientific" repair.

The "science" consists mainly of the methods adopted in recent years by H.M. Office of Works in determining the causes of failures in certain ancient structures and in the application of repairs, mainly of an engineering kind. The efforts of this Government Department have been largely directed to ruined works, not merely to their superficial condition, but more especially to their state of structural weakness. Much experience has been gained from "progressive experiments," and having unlimited means and an unfettered course, great thoroughness, amounting frequently, as some people think, to extravagance, has resulted; indeed, it is the persistent habit of this authority to reinforce whole structures as well as portions only. Mr. Harvey is well versed in these actual operations, which not only receive approval, but merit, in his view, the title of "science of conservation." Herein lies a great risk.

The first principles laid down by the author are: the conservation of original work; the avoidance of new material disturbing to artistic amenities; and to remedy the structural condition of defective parts "in such a manner as will best serve to unite the whole." These principles are old; the "science" is new, and, unfortunately, untried. The greatest principle of all, however, is not fully expressed in this work—that no two buildings are alike in design or construction, or yet in the nature of their defects. This principle is applicable to repairs, and is fundamental in historic buildings. Conservation is incomplete without this important consideration; indeed, great harm would be wrought if any accepted system of calculated repair became general. Continental efforts give an indication of the results of such procedure, and our own official attempts are now tending in the same direction of unsympathetic uniformity, combined with doubtful durability of modern building practice, mainly of an engineering nature.

Mr. Harvey's treatise is perhaps disproportionate, although its outlook is largely directed to the maintenance by reinforcement of one building. Comparatively little is said of the actual construction or materials at St. Paul's, matters in which the popular reader should be informed. Reference made to certain failures in the conception of the design is unconvincing, being qualified by the fact that the author's conclusions are subject to further investigation. It is not difficult, therefore, to make the reader's flesh creep, but it would have been comforting to all interested in St. Paul's if some reassuring statement had been submitted concerning essential preliminary repair before any colossal and theoretical scheme of doubtful value were attempted.

All practical builders will agree with Mr. Harvey's dislike of the grouting operations now being carried on; method and material are doubtful. The internal walls and piers of St. Paul's are faced with stone ashlar of varying kinds and sizes, masking a core of very weak and irregular lime-built stone rubble. Unequal settlement in the two materials has resulted, producing immense cumulative weakness in the main supports and arches of the great central feature, and it is in this direction that the first repair is needed without loss of time. The core has little weight-carrying value; its shrinkage from the ashlar facing transfers dangerous stresses to this outer masonry, and no grouting can possibly restore the necessary strength or means of solidifying the whole. Nothing but a replacement of the weak core by a reliable substitute will suffice, and it must be done before any fantastic remedy in reinforcement is considered, and must be carried out with materials the power and permanence of which are both tried and traditional.

"Two of the greatest assets of scientific repair are metallic reinforcement and Portland cement," and they are recommended for use in gigantic efforts at St. Paul's even as the Office of Works has employed them in endeavouring scientifically to maintain many of the finest ruins in this country on a lavish scale.

The author's design for the insertion of a large reinforced concrete cone to pick up the double drum carrying the dome and to distribute the gathered weights over walls, bastions, and vaults, is an exceptionally ingenious idea. It is open to several practical objections, and especially one not touched upon by Mr. Harvey—its durability. This new structural feature, being spherical in plan, requires continuity in its manufacture and subsequent functioning. It is doubtful if homogeneous continuity can be secured in the insertion of so large a feature in so impeded a position and so comparatively unknown a material. If it be attempted, then a risk of acute disturbance to the Cathedral is set up at the most complicated point in its construction, and if this condition of continuity is not secured the feature is valueless.

But why introduce an untried method of building in a monument of this importance? Reinforced concrete is a modern use of steel and cement, an ideal combination in theory, but one which has not stood any reasonable test of time. The common reinforcement, mild steel, is admitted to possess greater tendency to rust than any other metal in ordinary building use. It is claimed that the protective cover of concrete will exclude the varied atmospheric influences which promote corrosion. This cannot be so in any long period of years in circumstances of persistent alternations. In course of time these concrete insertions will require repair.

In the first place, how, it may be asked, is a fractured or contracted concrete beam to be reconstructed in position to retain its strength, and how is the rusted reinforcement to be removed and replaced with new? Again, to what extent will an ancient building, like St. Paul's, or a ruin like Tintern Abbey, be wrecked, first in locating and then in approaching and removing the buried ferro-concrete reinforcement? Architects familiar with the repair of old buildings will know how powerful and destructive is the action of rust expansion upon surrounding masonry. The tendency to rust varies, strangely enough, inversely with the age of the metal. Early Mediæval wrought iron was of great purity, and remains sound in many instances to this day; but gradually in later times as it deteriorated in quality so the rusting power increased, until to-day the ordinary wrought iron, and much more so the mild steel, have base properties conducive to rapid corrosion.

It is not necessary to refer to the unequal behaviour of the two main substances constituting ferro-concrete during expansion, contraction, and condensation, or to the absence of flexibility, adaptability, and the like. Let it be said that this material, which forms the basis of the application of scientific repair, is altogether undesirable in ancient buildings, all of which, being lime-built, are in various degrees flexible and yielding to climatic and other influences.

The question of corrosion of reinforcement does not enter largely into Mr. Harvey's calculations. He recognises it, however, in recommending that it be "out of contact with the air." Again, he says that certain masonry "should be reinforced with non-corrosive metal" owing to the slight substance of the stonework. Thus is this profound condition slurred over. It would be a misfortune if this theoretical method of repair should be adopted in St. Paul's Cathedral. It should be remembered in this connection that the Surveyor to the Fabric has for years been engaged in removing rusted wrought iron and repairing the damage thus caused to masonry.

In frequent references to the Office of Works, to the ruins of Tintern, Jedburgh, and Kelso Abbeys, Mr. Harvey unfolds the "scientific" measures. Is it not a misfortune that so much untried ferro-concrete should have been inserted in these remains at such great public expense? At Tintern Abbey a whole network of immense ferro-concrete beams has been inserted in the tops of the walls. The beams have a protective cover of masonry of comparatively little substance, mainly to hide them from view, and they are situated in those parts of the walls subject to greatest climatic exposure. The alternations of temperature and of moisture cannot allow these "scientific" agents to remain quiescent in such a situation. Sooner or later, when rust sets in to the shrinking or expanding beams, further repairs will be required. Where, then, is the "ideal of homogeneity"? The greatest trouble of all begins in the new repairs, and will bring irreparable havoc to the structures.

The walls of Jedburgh Abbey have stood for 800 years, badly built as they were, and for centuries have remained unroofed and unprotected. Will the rustable reinforcement and other mild steel details of the official repairs endure for half that time? This is a hopelessly artificial way of repairing ancient buildings, for we are dealing with monuments, not maisonettes. It is surely the safest course to adopt to repair old buildings as far as possible with the same materials of which they are built.

Westminster Hall roof could have been repaired in oak, and whereas much original work might be lost, both the design and the wonderful conception in carpentry would have been retained. Much of the latter has been displaced to accommodate a heavy and costly steel reinforcement, the durability of which is uncertain, owing to its inaccessibility for painting and for other protective measures.

Upon other processes of preservation involved where the "scientific" method is inapplicable Mr. Harvey's treatise is unhappily brief. The repair of jointing in masonry by pointing, the methods of replacement of decayed solid masonry, the removal of buried wrought iron, the natural choice of materials, the repair of settlements, the effect of vibrations and of artificial heat upon old buildings, climatic influence and other matters, have little place in the reference to St. Paul's Cathedral or to the other buildings dealt with by the author.

The burden of this book, therefore, is wholesale reinforcement; and because the combination of its four materials has a calculated basis, the *application* of this process, untested by time, yet doubted by experience, is submitted without reservation as the "scientific" method of restoring decaying structures.

* By William Harvey. Price 10/6. London: 9, Queen Anne's Gate, Westminster, S.W.1. 1925.

MODERN TOWNPLANNING IN PALESTINE

THE progress of the Jewish re-settlement of Palestine is well illustrated by the application of the most up-to-date methods of town planning. Mr. Richard Kaufmann (the town-planning expert employed by the Zionist Organisation, the Palestine Land Development Co., and other organisations) was in England recently to confer with Prof. Abercrombie and other authorities here, and while in London gave a brief account of his work.

Mr. Kaufmann said that the rapidity with which new Jewish settlements were being created, both in urban and agricultural districts of Palestine, made the question of town planning a matter of urgent necessity, both from the æsthetic and economic points of view. The hilly nature of the country made the work technically of some difficulty, but considerable success had been achieved in adapting the lay-out of roads and avenues to local contours. He illustrated this by examples of new suburbs constructed in the environs of Jerusalem and Haifa, where advantage was taken of every feature of the surroundings to combine beauty with utility.

Palestine is the first country in the world where the principles of townplanning have been successfully applied to agricultural settlements. Mr. Kaufmann showed two examples of his work in this direction. The co-operative farm colony of Nahalal in the valley of Jezreel is situated on an oval hill, the summit of which has been used for the communal buildings which dominate the settlement. The hill is encircled by a road, from which the approach roads lead off. In the centre space of the circle are placed the houses and gardens of the non-farming members of the colony, the schoolmaster, tailor, shoemaker, &c. In the outer circle are the homesteads and holdings of the farming families, all equidistant from the communal and utility buildings. The cereal lands radiate out on the flatter areas at the foot of the hill.

A different arrangement has been adopted in the case of the other settlement, known as Chittim, a colony of orthodox Jews, on a similar hill near the lake of Tiberias. Here, for religious and æsthetic reasons, the synagogue and people's hall are placed at one end of the hill overlooking the lake, while the utility buildings (such as the granary), are again placed in the centre. Careful planning has been applied to the courtyard of each farm, regard having been paid to the prevailing winds, &c.

Mr. Kaufmann's most ambitious design relates to a projected town at the junction of the main roads and railways between Jerusalem and Syria and Haifa and Damascus. Special attention has been paid to the location of the industrial, commercial, and residential districts, clever use having been made of park belts, while the sunken railway will cause the minimum interference with traffic. Mr. Kaufmann stated that there was a real appreciation in Palestine of the benefits of town-planning and every new scheme showed improvements.

CORRESPONDENCE

[While we are glad to publish letters on professional and other matters of interest to our readers, it must be understood that we do not necessarily endorse the remarks of correspondents, who will oblige us if they will express their views as briefly as possible.]

The Raffles Davison Volume.

SIR,—I was pleased to read the suggestion that a volume recording the drawings of Mr. Raffles Davison should be published. As a reader of your journal for many years, and as an ardent admirer of the work of Raffles Davison for 25 years, I trust the scheme will be supported to the extent of publication. Should this take place, please be good enough to record my name as a subscriber.

Sydney. B. J. WATERHOUSE.

The Mock-Auctioneer.

SIR,—May I request the hospitality of your columns to warn the public against the wiles of the mock-auctioneer? During the past few months the numbers of these pests have increased out of all reckoning. At the same time, only a very few have been the subject of criminal prosecution.

On Saturday, during the course of a walk eastwards from Piccadilly-circus, I came across no less than seven "mock-auction" rooms in full swing. Their methods did not differ to any extent. First, a few flashy-looking "gold," "silver," or china-ware articles were pressed upon the curious ones who had drifted in. Then, actively assisted by friends in the audience, the bidding for other junk was forced up, concluding with the sale to half-willing, more than half-muddled, purchasers of similar trash at extortionate prices.

As has been already intimated, my Society are sparing no pains to obtain the co-operation of all bodies interested—property owners, tenants' protection associations, goldsmiths, silversmiths, furniture makers—in order that a Bill may be presented to Parliament, and an effectual stopper placed upon a nuisance that has been suffered to continue far too long. We have already met with a considerable measure of success, and trust to be in a position to go forward with such a measure next session.

JOHN STEVENSON,
General Secretary,
The Incorporated Society of Auctioneers and Landed Property Agents.

The Freemasons' Million Memorial Scheme.

SIR,—Surely the imagination of all Masons must be deeply stirred by the projected memorial, the scale of its conception, and, not least, the warmth of response. Whilst the appeal is still maturing, and before the project is too far advanced for the incorporation of this thought, I suggest to those responsible for its further development that it would be well to provide for a Masonic Memorial of a treatment firmly rooted in the spirit, symbolism and craft of Masonry, and that a mode of construction should be adopted which employs the materials and methods of the old master builders. Let us for this purpose rely upon masonry—rough hewn, if need be—built to endure, of granite, and above all, do not let us compromise with substitutes and imitations.

ARTHUR E. COLLINS,
Past President,
Institution Municipal and County Engineers.

Lowest Tender Not Accepted.

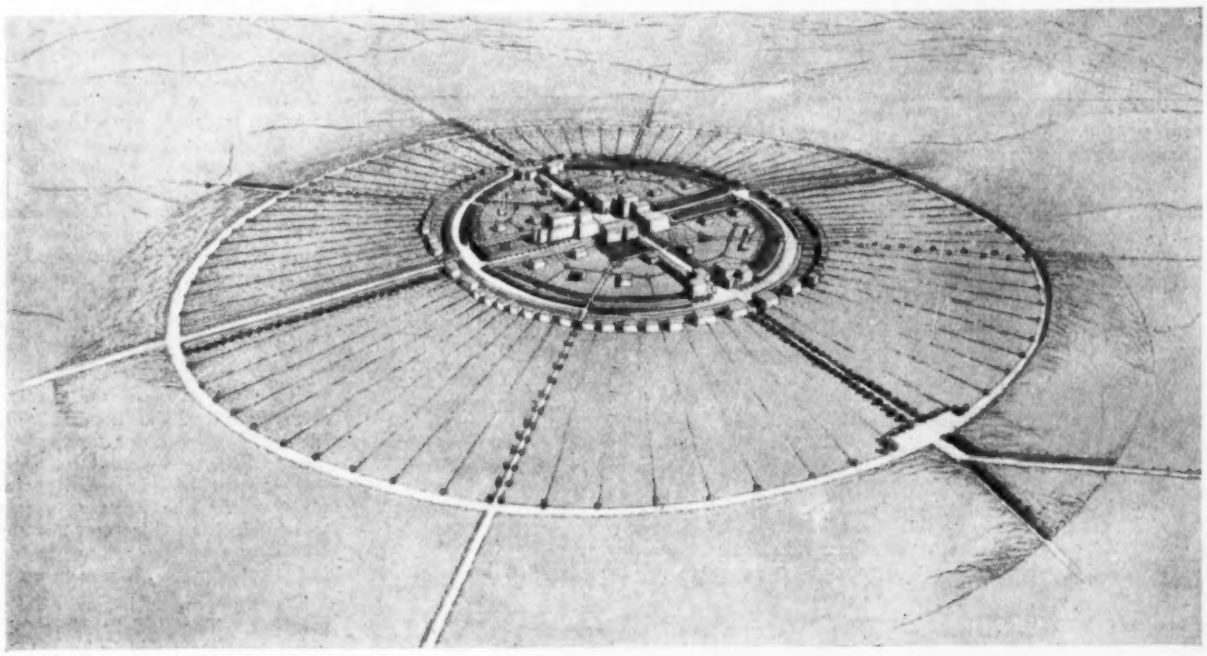
SIR,—We regret to find a growing tendency among church councils, &c., not to accept the lowest tender in private competitions, but to choose their own man. Is there any way of checking this manœuvre, which cuts at the root of bona-fide tendering? We should be glad to know if any brother builders are suffering from this practice.

"A LONDON FIRM."

Heal's Building.

SIR,—I was very pleased to notice in the article by Mr. William W. Wood, A.R.I.B.A. (September 11th), that Heal's shop in Tottenham Court-road is praised as a beautiful building. There are few other buildings of this standard in London's streets.

TERENCE LANE.



Bird's-eye view of the Lay-out of the village of Nahalal, Palestine.

MR. RICHARD KAUFMANN, Architect.

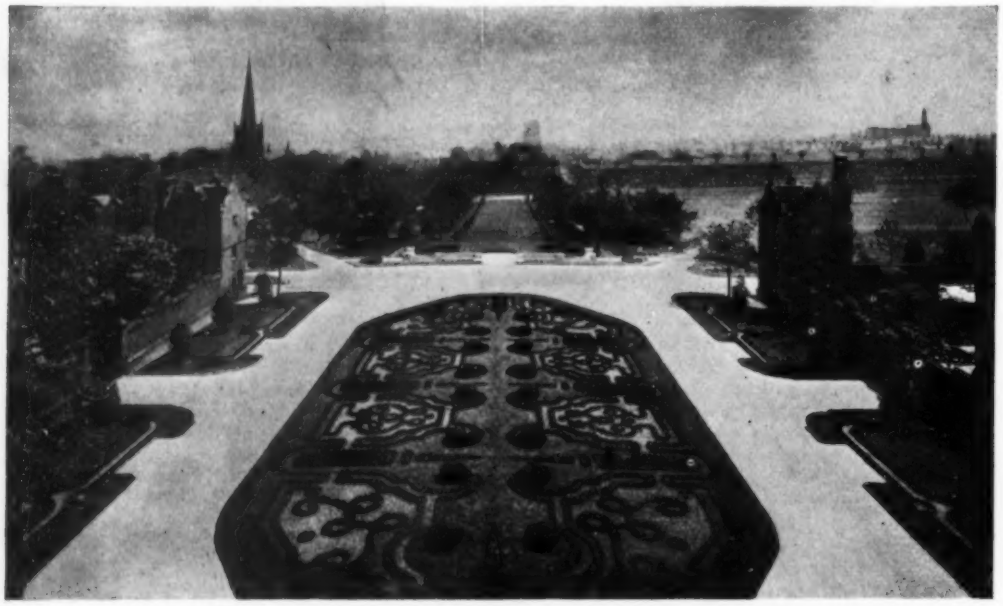
THE BIRMINGHAM CIVIC SOCIETY'S REPORT

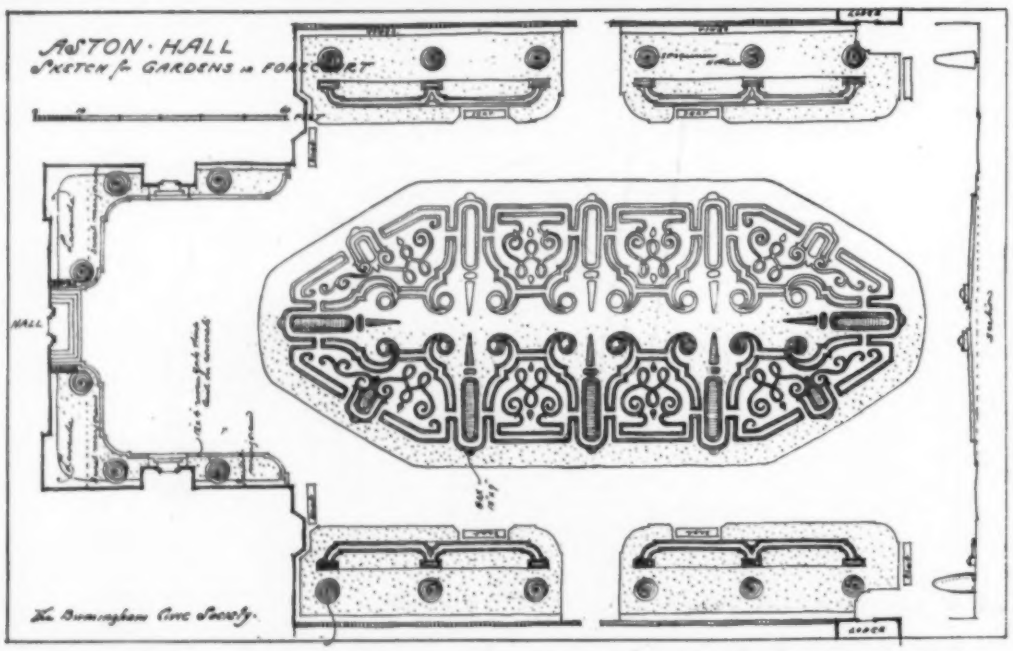
We have received the annual report for 1924-25 of the Birmingham Civic Society, a society of citizens of that town "who see the necessity for stimulating a wider concern for the beauty of their city." The importance of the work of this body, from an æsthetic point of view, cannot be over-estimated; its general aims are as follows:—(1) To stimulate historical interest in the city, and to this end to preserve all buildings and monuments of historical worth; (2) to preserve all objects of beauty, and to maintain a vigilant opposition to all acts of vandalism; (3) to promote a sense of beauty, and to stimulate civic pride in the domestic and civic life of the citizens, by urging the adoption of the highest standards of architecture for domestic buildings, offices, warehouses, factories, etc.; (4) to work for a more beautiful city, by assisting with advice any scheme or works controlled by public bodies, ranging from town planning to designs for parks, bridges, fountains, memorials, etc.; (5) in addition to influencing the work of others, to select suitable projects to be carried out by the Society itself.

A general meeting of the members of the Society was held in the City Council Chambers on June 29 to receive the annual report. The Right Hon. the Lord Mayor (Alderman Percival Bower, J.P.) presided, and the Earl of Crawford (Chairman of the Royal Advisory Art Commission) gave an address. The Gold Medal of the Society, awarded annually for exceptional services towards the increase of amenity in Birmingham, was presented to Alderman G. Cadbury, junr.

The New Terrace Wall and Steps, Aston Hall.

The development of the Park plans referred to in the previous year's report has proceeded during the current year. The entrance to the new park at Yardley is an example of this branch of the Society's activities; one can see by a glance at the illustration how eminently suitable is the general arrangement.





View and Plan of the New Gardens and Terrace in the Forecourt of Aston Hall.

Another similar work being executed by the Society, in co-operation with the City Parks Department, is the developing of the grounds of Aston Hall, in order to bring them into closer relation with the mansion itself, and by doing so, to provide it with a setting worthy of its historical and architectural importance. How far this has been done can be seen by looking at the illustrations reproduced from the Report.

The first portion of the new gardens to be constructed was that in the east forecourt and the central avenue extending to the east boundary. The avenue has been converted from gravel to grass; and when the accompanying view was taken, the focal point at its eastern extremity was about to be developed, with the great Warwick vase from the south portico of the Hall as a central feature. At the point where the avenue reaches the forecourt, the new stone terrace and steps designed and given by the Civic Society have been completed.

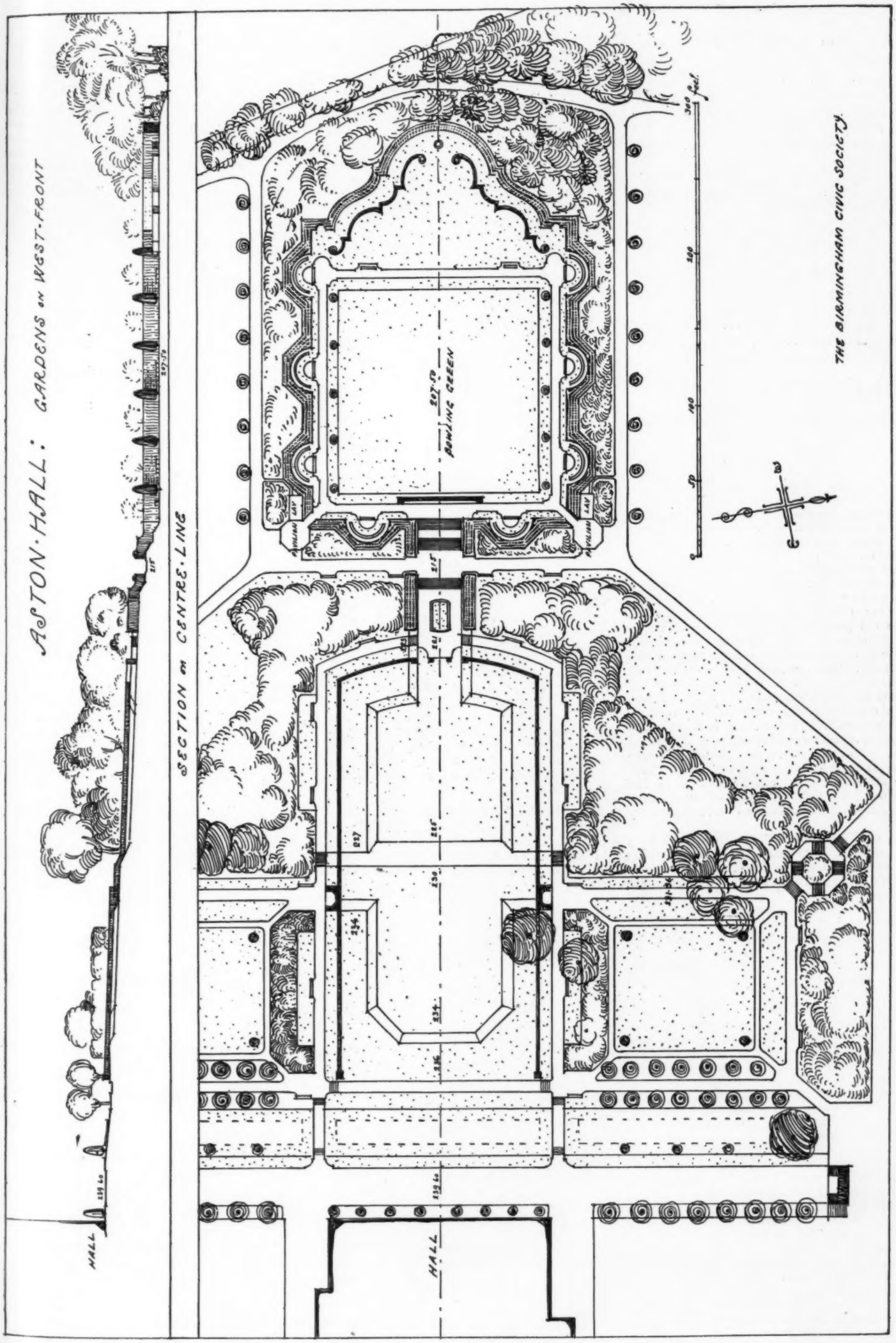
The box garden in the forecourt is remarkably successful in its first effect, but it will readily be understood that the precise cutting and shaping of the fully established plants is essential to perfection in topiary work of this character. Several important accessories not yet in place will add sensibly to the general effect. Attention is drawn to the unusual dimensions of the centre bed, and to the fact that only flowers known in the seventeenth century are to be planted there.

The plan of the bowling green is part of the working drawings prepared for the gardens west of the Hall; the work itself is still in its initial stages. Much of the levelling has been done; the bowling green and Italian Garden have been grassed, and the shaped holly hedge about the latter has been planted. It is hoped to complete the greater part of this section of the work during the present year.

This for the garden planning. The Report goes on to say that "as the new garden develops, the need for a change in the present arrangement and use of the Hall itself has become apparent." A letter to the Chairman of the Art Gallery Committee, indicating the views of the Society, is reproduced; the suggestions put forward include the removal of some modern out-buildings which back on to the north wall of the forecourt, and the replacement by less crudely coloured glass of that in the end bay of the galleries. The Director of the Art Gallery intends to put these ideas into effect.

Other activities of the Society include the preservation of old houses. The old Crown Inn at Deritend, for example, a fine half-timbered house, probably the eldest in the city, was recently threatened with demolition after sale. The Society proposed to buy it to save it from this fate, but compromised by obtaining a written assurance from the intending purchaser that it was in no danger.

The membership is now 330, and is steadily growing. The Society is confident that if its work were more widely known it would receive still further support; the annual subscription is purely nominal. Those interested should write to the Secretary, at 37, Bennett's Hill, for particulars, and enclose 1s. 6d. for this year's report.



Picture Map of the Complete Scheme for Aston Park, Birmingham. [From the Report of the Birmingham Civic Society, 1924–25.]

LEADING CONTENTS.

	PAGE
A PROPAGANDA COMMITTEE?	449
NOTES	450
GENERAL NEWS	452
COMPETITION NEWS	452
THE PRESERVATION OF ST. PAUL'S CATHEDRAL	454
MODERN TOWNPLANNING IN PALESTINE	455
CORRESPONDENCE	455
THE BIRMINGHAM CIVIC SOCIETY'S REPORT	456
LEGAL SECTION	464
HEATING AND VENTILATION	466
THE BUILDING TRADE	474
TOWNPLANNING INSTITUTE	475
CONTRACTS, COMPETITIONS, &C.	476
NEW BUILDINGS IN LONDON	478
PROPOSED NEW BUILDINGS AND OTHER WORKS	479
NEW COMPANIES	483
TENDERS	483

ILLUSTRATIONS

Southampton Harbour Board's New Offices.

The new offices of the Southampton Harbour Board, which were recently opened by Earl Jellicoe, take the place of a previous structure erected in 1885. Numerous schemes for a new building had been prepared during the last few years aiming at the better housing of the Board, but for one reason or another they never materialised, and remained in abeyance till November, 1922. It was then resolved to re-open the matter, and the Board's engineer and architect (Mr. E. Cooper Poole) prepared plans which were finally approved.

The new offices are built partly upon the site of the old premises, a large portion of which they incorporate. The external dominating feature is a Doric central colonnade pediment and tower. The entrance hall is carried out in oak and is square in shape, one side being devoted to a counter, over which the business with the general staff is conducted. A corridor which leads off from the left hand of the entrance hall gives access to the wharfinger's office, and the engineer's quarters, which include a private office, drawing office, plan rooms, &c. These have all been carried out in oak. A similar corridor on the right hand side of the entrance hall leads to a grand staircase of oak, elaborately carved.

The clerk's room, which is also entered from this corridor, is panelled in oak. Adjoining this are the accountants' office, and the Harbour Master's office. The clerks' apartments are light and roomy, and the accountants' quarters are furnished in mahogany.

The largest room on the ground floor is the general office, which is designed especially for the accommodation of the staff.

On the first floor the principal offices are found. These comprise the board room, committee room, chairman's room, lobby and cloak room. The committee room, which is noteworthy for its five massive windows and panelled walls, has been furnished throughout in oak, the accommodation being sufficient to meet the needs of any of the Board's many committees. The room overlooks the huge sixty-thousand-ton floating dock and the Town Quay, the latter of which is the Board's property. Adjoining it is the chairman's private room, furnished and panelled in mahogany.

A circular columned and domed lobby leads from the committee room to the board room. Here is also a balcony over the entrance. A light well for the entrance hall below is another notable feature, the inside of the circular aperture being noteworthy for some carved panels of nautical interest. The dome and columns of this lobby are of the Ionic order. On the other side of the lobby access is provided to the board room, which has mahogany panelling and twelve mahogany columns of the Ionic order, with copper bases and caps. They are formed in groups of three in each of the four corners of the room.

The contractors were Messrs. Playfair & Toole, Southampton, for the foundations; Mr. H. Cawte, Southampton, for the superstructure. The following were sub-contractors: Artificial stonework, Messrs. Stuarts Granolithic Stone Co., London; hardwood joinery, Messrs. Elliott & Sons, Reading; heating and ventilating, Messrs. G. N. Haden & Sons, Trowbridge; fibrous plaster work, Messrs. H. E. Gaze, Ltd., London; metal work, Messrs. Crittall, Braintree; steelwork, Messrs. E. C. & J. Keay, Ltd., Dalston; "Tilas" floor covering, Messrs. Scott, Somerville & Co., Southampton; electric lighting, Messrs. F. W. Cook & Co., Southampton; clocks by the Synchronone Electric Clock Co., London; complete furnishings by Messrs. Shepherd & Hedger, Southampton; carving by Mr. L. F. Rosslyn, R.B.S., South Kensington.

Tetton House, Kingston, Somerset.

This house, which stands on the beautiful southerly slope of the Quantock Hills, appears originally to have been built about 130 years ago. Since its building, various straggling additions have been made to it and several of the internal walls on the ground floor have been removed in order to enlarge the principal rooms. The present alterations comprise the addition of a smoking room and completely new accommodation for the owner and his family, consisting of two private sitting rooms, bedroom suite and nurseries. All the offices, except the kitchen block, had also to be rebuilt, and the opportunity was taken, therefore, of making these works a complete remodelling of the whole scheme. The convenience of service and the desirability of being able on occasion to use the new private rooms without opening the rest of the house dictated that the plan should be formed round an enclosed court. The west front is entirely new, and the south front owes to the existing building nothing but the general *ordonnance* and proportions of the openings. The irregular levels of the ground have caused considerable difficulty in planning.

The walls are covered with cement distempered a bright apricot colour to match what old work remains. The dressings are of artificial stone painted white. The domical roofs to the bay windows are of copper, and the roof slopes where visible are covered with mottled purple and green slates from the West Country. Mr. H. P. Goodhart-Rendel, F.R.I.B.A., is the architect.

Memorial Hall, London University.

This perspective view shows the reconstruction of the Memorial Hall, formerly a church building in Gordon-square, which was designed by Professor Donaldson. It is proposed to install an organ and build a gallery, and to embellish the interior as part of the War Memorial to those Fellows and Members of the College who fell during the Great War. The architects are Messrs. Richardson & Gill, FF.R.I.B.A.

New House, Wolsey-road, Moor Park, Herts.

This house, which is now being erected in the Wolsey-road, Moor Park, is situated on a site falling rapidly from the road and advantage has been taken of this fact and an endeavour made to produce a house of a long, low, farmhouse type. Externally, the house is treated with roughly-trowelled "smooth cast," the main gabled feature to the front being in Dutch bricks with oak half-timbering over, adzed and left in its natural state. The roofs are covered with dark sand-faced tiles. The windows are standard iron casements throughout. The accommodation comprises drawing-room, dining-room, hall, kitchen, garage and offices on the ground floor, and five bedrooms, bathroom, &c., on the first floor. Messrs. D. G. Somerville & Co., Ltd., are the contractors, and Mr. Gerald Warren, F.R.I.B.A., is the architect.

Southway House, Southway, Hampstead.

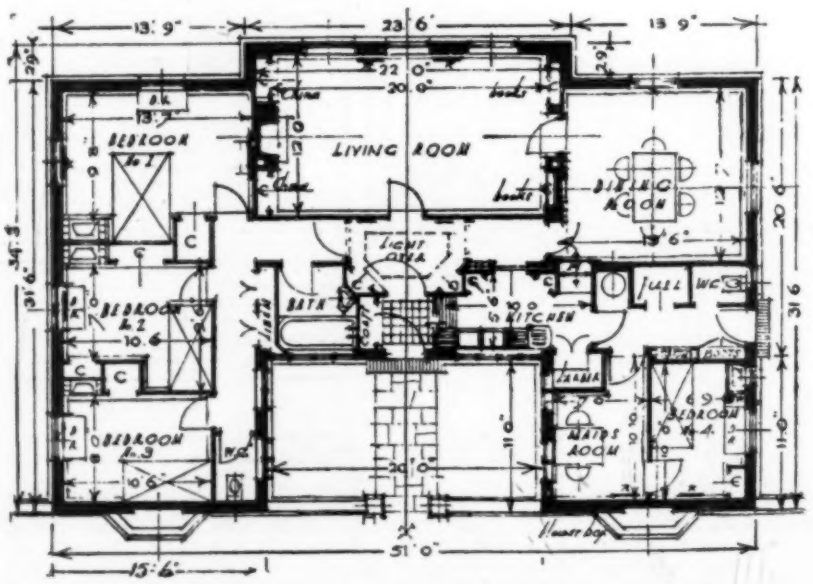
The principal materials used in this house are hand-made red facing bricks, hand-made red tiles to roof, a delf faience surround to the doorway, wrought-iron and stone to the balcony, and stone and brick pavings. The general contractors were Messrs. Lister-Mawby (Builders), Ltd., and the sub-contractors were as follows: Hot and cold water and heating installation, Messrs. The Air Vent Heater Co., Ltd.; facing bricks, Messrs. Thomas Lawrence & Co.; roof tiling, Messrs. Roberts, Adlard & Co.; marble to fireplaces, Mr. H. C. Tanner; faience surround to front door and tiling to fireplaces, Messrs. A. Bell & Co., Ltd.; parquet flooring to hall and drawing room, Mr. Jos. F. Ebner; garden, Messrs. The Horticultural Supply. The architects are Messrs. William & Edward Hunt, FF.R.I.B.A.

A Bungalow near Halstead, Essex.

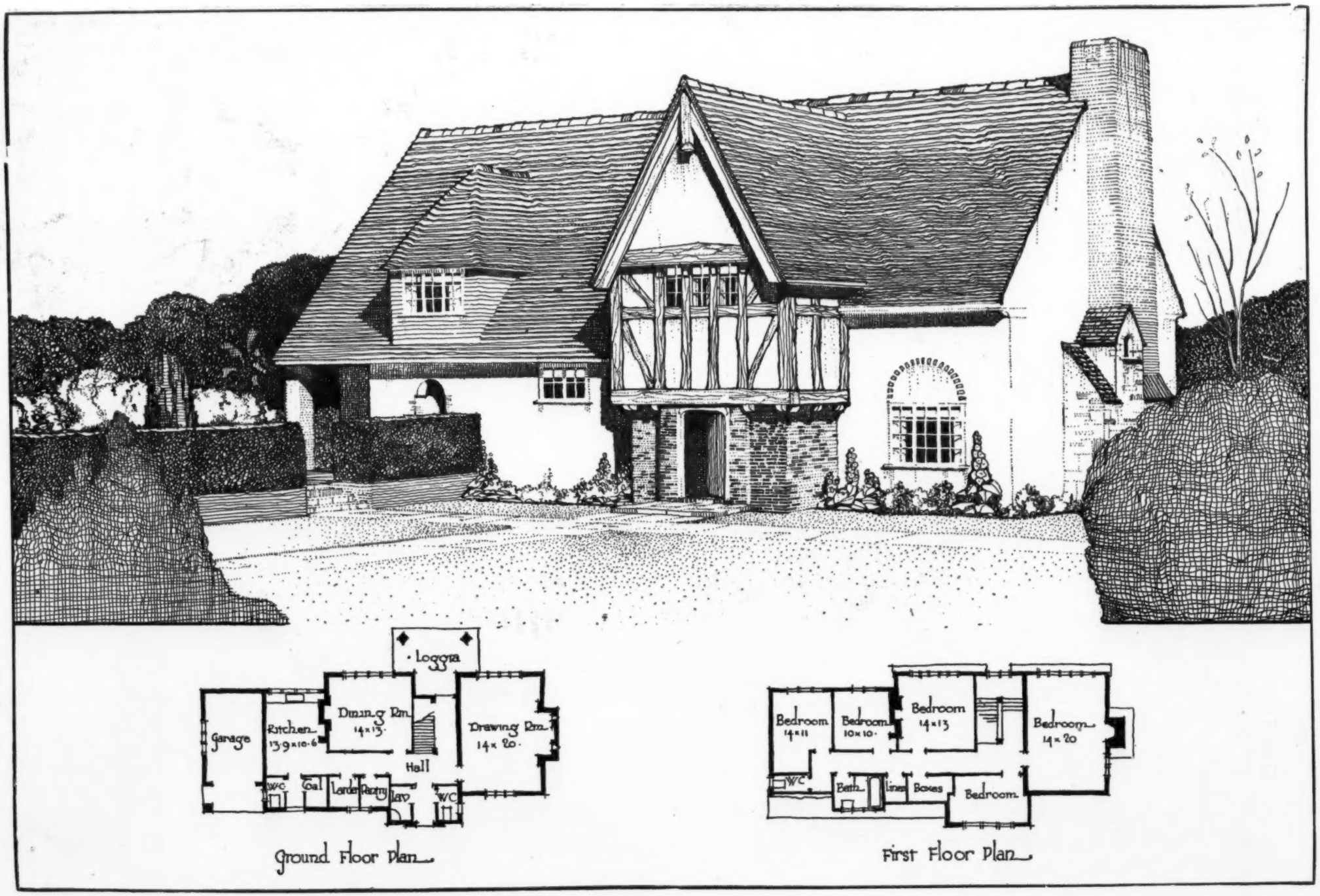
Planned as a roadside house in a lane, this house has all windows save offices to the south and west. The accommodation comprises two living rooms, four bedrooms and offices. Bedrooms, living rooms and service quarters are planned as three self-contained groups off a small hall. Mr. P. D. Hepworth, F.R.I.B.A., is the architect.

Little Paddocks, Sunninghill.

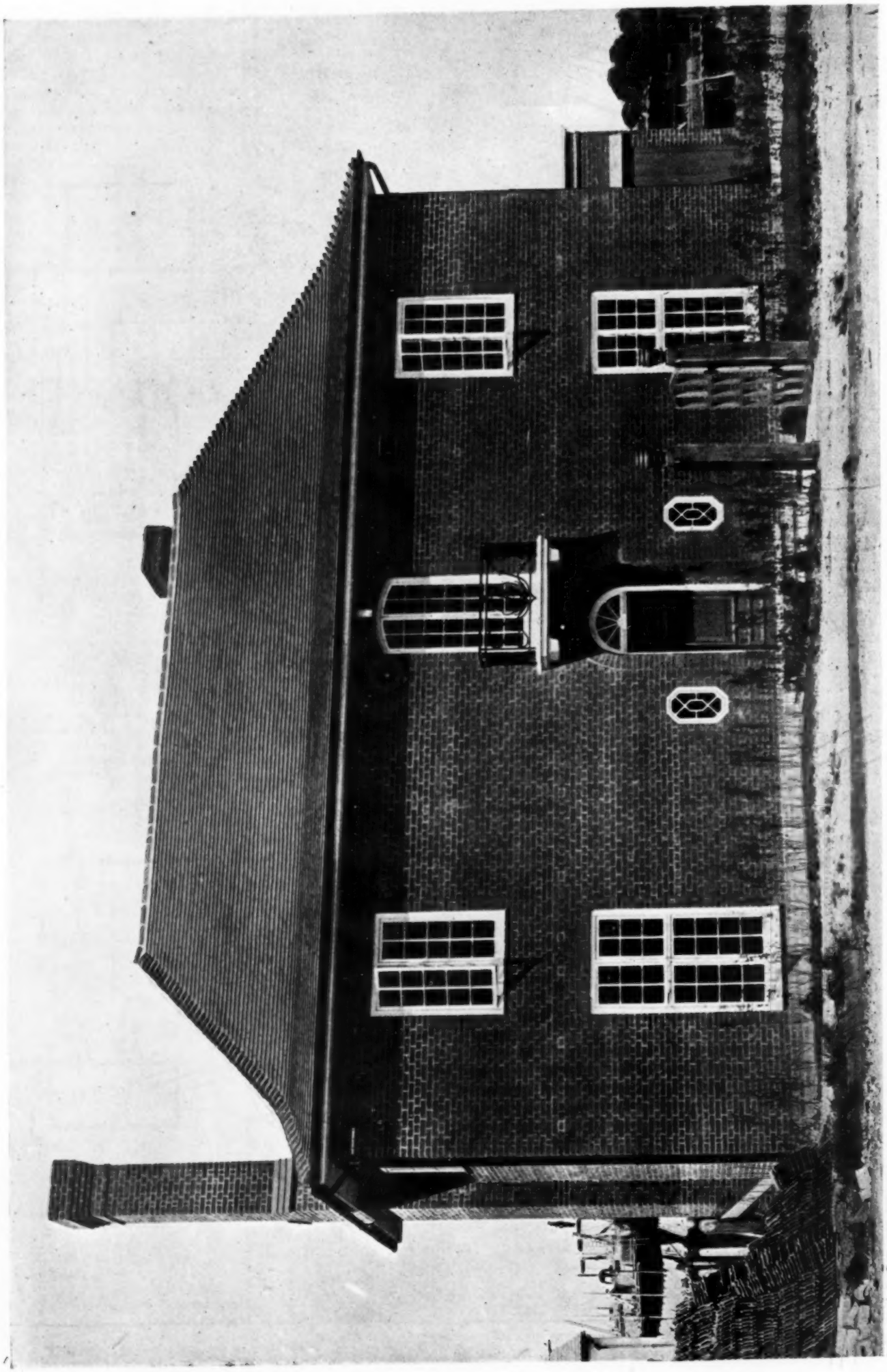
This illustration shows some exterior additions to a country house built in the late eighteenth century. The additions have been carried out to harmonise with the existing features. The contractors were Messrs. W. H. Lordon & Son, Ltd., Upper Tooting, S.W., and the architects Messrs. Richardson & Gill, FF.R.I.B.A.



Plan of Bungalow, near Halstead, Essex.
MR. P. D. HEPWORTH, F.R.I.B.A., Architect.



A House in Wolsey-road, Moor Park, Herts. MR. GERALD WARREN, F.R.I.B.A., Architect.



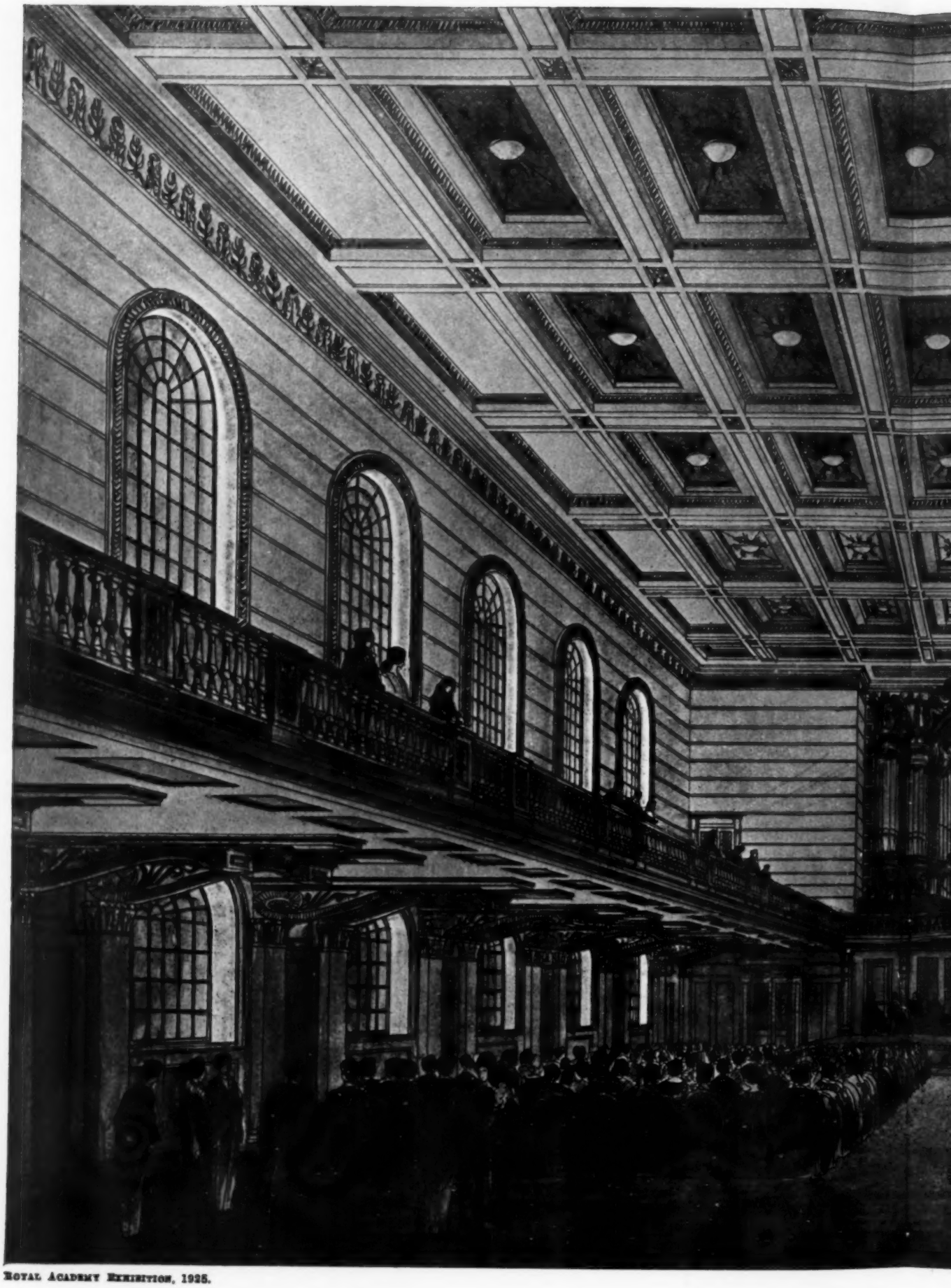
Southway House, Southway, Hampstead. MESSRS. WILLIAM & EDWARD HUNT, FF.R.I.B.A., Architects.

UNIV OF MICH

ROYAL ACADEMY EXHIBITION, 1925.

A Bungalow, near Halstead, Essex. MR. P. D. HEPWORTH, F.R.I.B.A., Architect.

UNIV. OF MICH.



ROYAL ACADEMY EXHIBITION, 1925.

Interior of Memorial Hall, Lo

MESSRS. RICHARDSON & GILL, FF.R

al Hall, London University.

t Gill, FF.R.I.B.A., Architects.

Tetton House, Kingsto

Mr. H. S. GOODHART-RENDEL, F

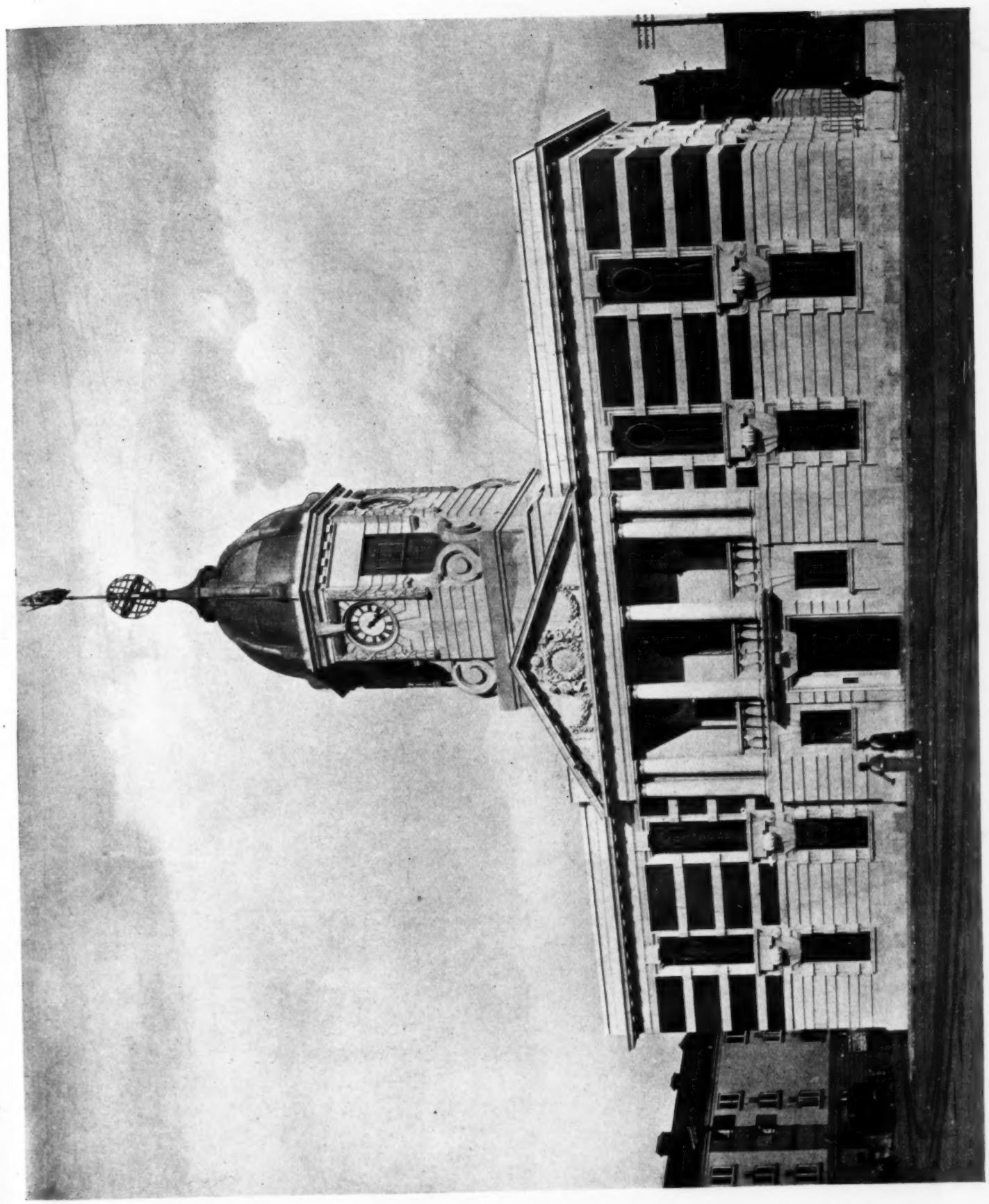
, Kingston, Somerset.

RENDEL, F.R.I.B.A., Architect.

UNIV. OF MICH.

"Little Paddocks," Sunninghill. Messrs. Richardson & Gill, FF.R.I.B.A., Architects.

UNIV. OF MICH.

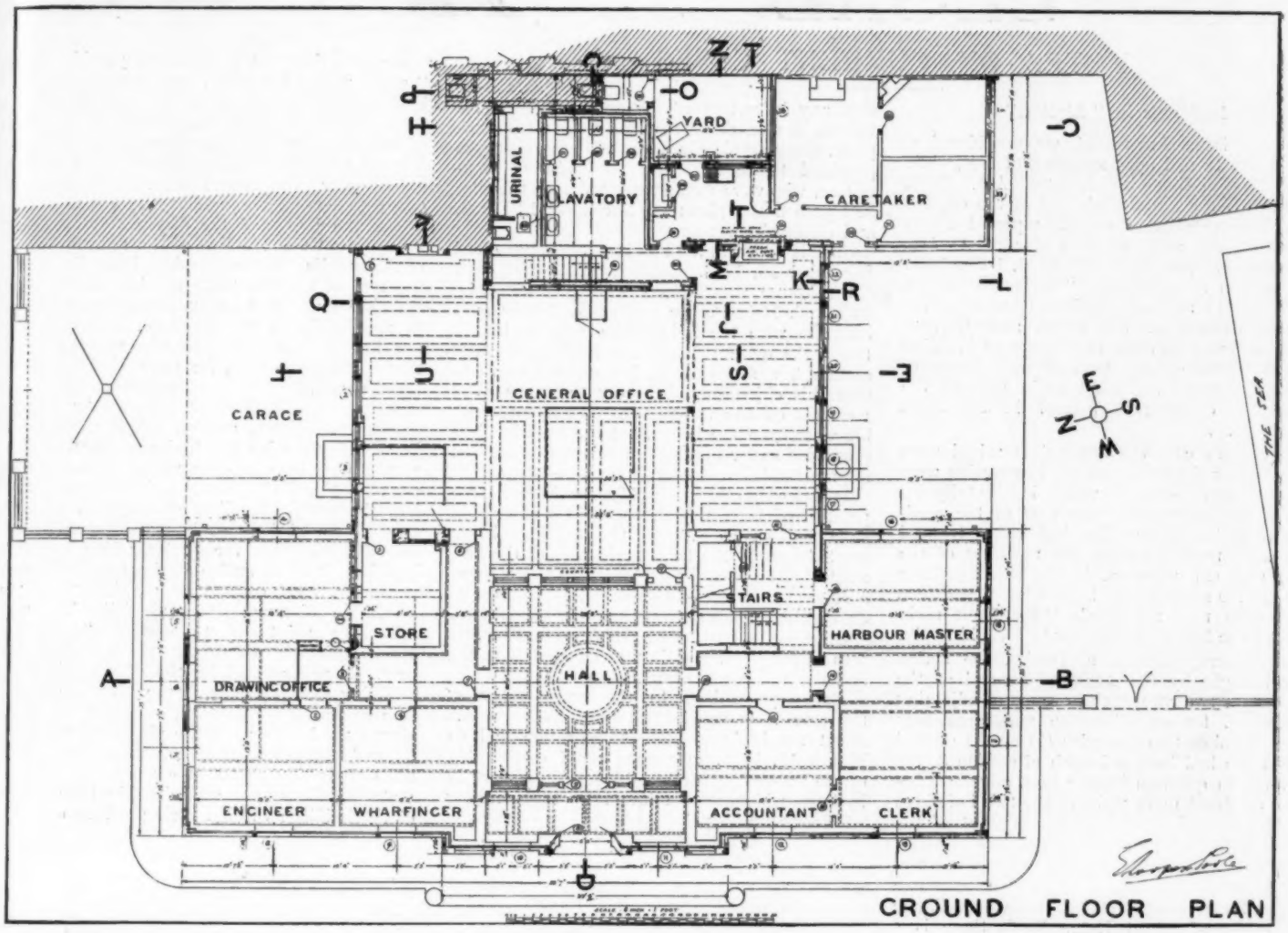


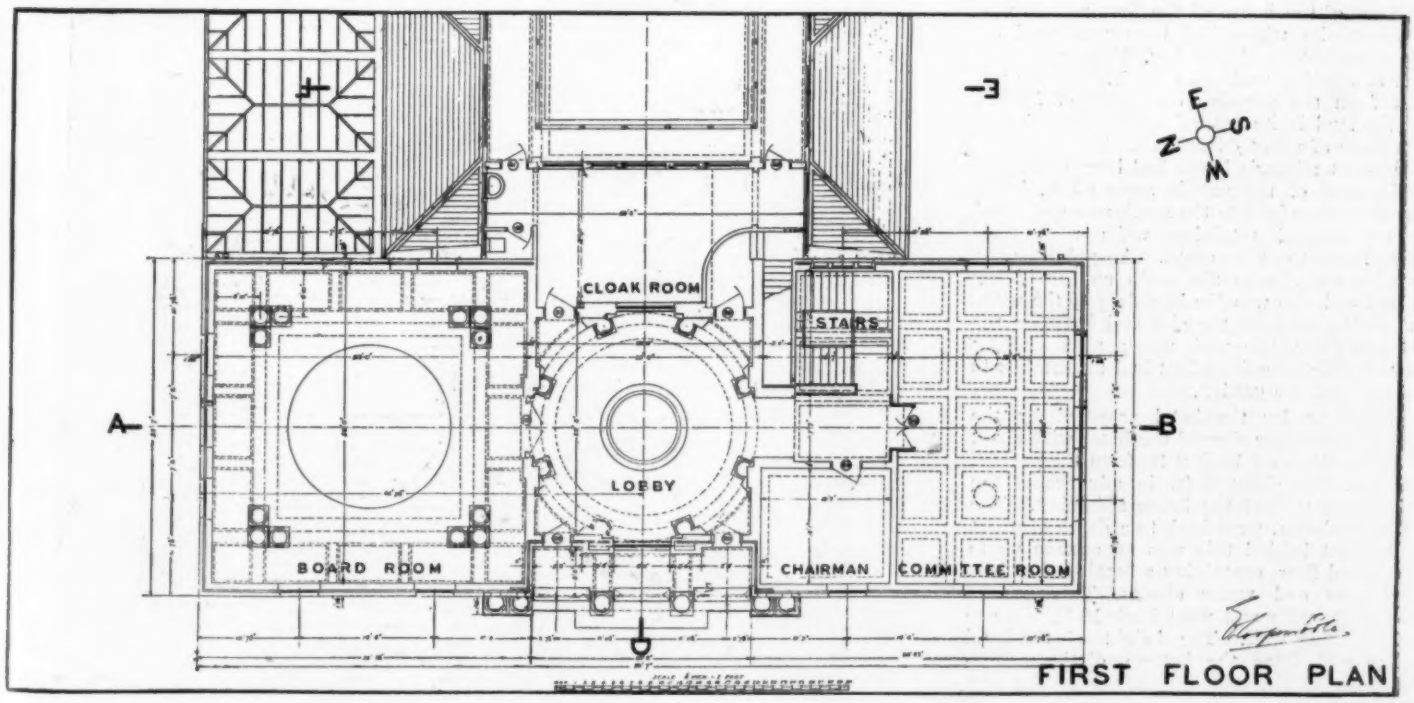
New Harbour Board Offices, Southampton. Mr. E. Cooper Poole, Board's Engineer and Architect.

THE HALL.

THE BOARD ROOM.

New Harbour Board Offices, Southampton. MR. E. COOPER POOLE, Board's Engineer and Architect.





New Harbour Board Offices, Southampton: Plans.

MR. E. COOPER POOLE, Board's Engineer and Architect.

LEGAL SECTION

NOTES ON CURRENT CASES

Buildings in "Streets."

IN our issue August 21 we considered a case which turned upon section 3 of the Public Health (Building in Streets) Act, 1888, Attorney-General *v.* Laird, and in the current Law Reports another case is reported which raised a different point under that Act, (Attorney-General *v.* Denby, 1925, 1 Ch. 596). The section is as follows: "That it shall not be lawful in any urban district, without the written consent of the urban authority, to erect or bring forward any house or building in any street or any part of such house or building beyond the front main wall of the house on either side thereof in the same street. . . ."

In Laird's case the two points raised were (1) whether the two buildings in question were in the "same street," which incidentally involved finding whether the part of the roadway in which the building had been advanced was a "street" within the meaning of the Act; and (2) whether, if the two buildings were in the same street, their relative positions were such that the words "the front main wall of the house on either side" could apply.

In Attorney-General *v.* Denby, the action was brought by the Attorney-General at the relation of two ratepayers, owners of adjoining properties, for an injunction and mandatory order based on two grounds: (1) on the ground that there had been a breach of section 3, the building in question having been advanced beyond the front main walls of the two buildings on one side of it without due consent of the urban authority; and (2) that this building contravened a by-law as to ventilation and air-space.

The facts, shortly stated, were as follows: On the sea-front at Lyme Regis there is a parade facing the sea, and at the portion of this parade in question there are houses which form a row.

The house of one of the relators was at the west end of the houses forming this row, facing the sea, but set back 10 ft. from the parade. The house of the other relator adjoined this house to the east. Immediately to the west of the house of the first relator was a vacant site which had been purchased by the defendant in September, 1923, with the view of erecting an hotel upon it. The site ran back from the parade to a depth of 50 ft., but the land in its natural state rises abruptly at a slope of about 40 degrees. The site next to the first relator's house had been excavated to the level of the parade some 40 ft. back, and the higher land to the north was supported by two curved retaining walls with their concavities to the south. A public park bounded the site to the north on the higher ground and also was the boundary to the west, but to the west of the site and between the site and the public park was a piece of hilly ground which the defendant had undertaken to use as a private garden.

The plans for the hotel prepared by the Borough Surveyor showed the hotel with about 60 ft. frontage set back 2 ft. from the parade, and therefore about 8 ft. in advance of the front main wall of the house adjoining. The hotel, as shown, went back to a depth of about 28 ft., but behind this was an annexe up to the second floor, containing a heating chamber, bathrooms and water closets. This annexe was 13 ft. wide and went back 10 ft. close to the retaining wall. The height of the hotel to the roof from the bottom of the excavation was 34 ft., and the bottom of the roof was about level with the top of the above-mentioned retaining walls, beyond which the ground sloped upwards to the public park.

The plans did not show the position of the buildings immediately adjoining the proposed hotel, as required by by-law 45, so as to indicate any infraction of section 3 would be involved, but in other respects they were complete, showing clearly (*inter alia*) the air-space proposed to be left, and the building committee, who were well acquainted with the site, had passed the plans on December 10, 1923, and stamped them as approved.

On this approval the building was commenced December 16, 1923.

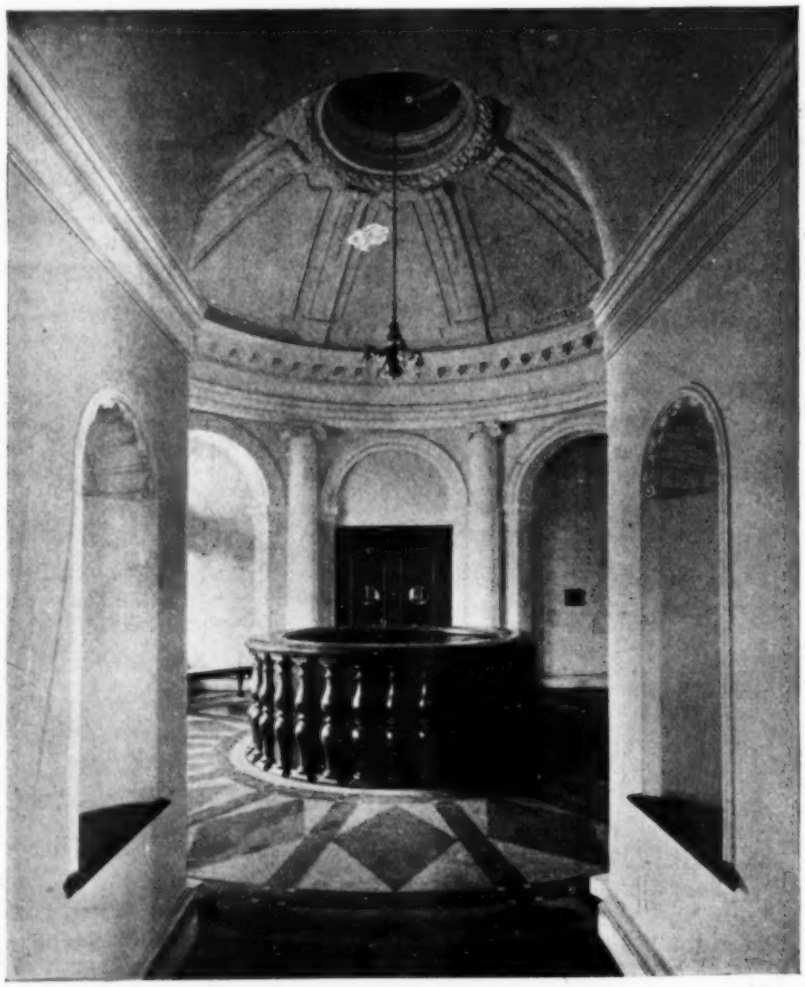
On March 29, 1924, the first relator, who on March 11 had objected that the hotel would interfere with the light and air to his house, raised the question as to the infringements of section 3 and by-law 7, but offered to withdraw his objections if the corner of the hotel were cut off so as to prevent interference with his view from the house, but the building had proceeded so far that this course was considered impracticable.

It was only on May 12, 1924, and after these points had been raised, that the Corporation gave written consent to the building being erected beyond the front main wall of the first relator's house, and they added to the consent a statement that this had nothing whatever to do with any action of the Building Committee.

On May 14 the fiat of the Attorney-General was applied for, and it was granted May 24, and the action commenced June 2.

Before proceeding to the consideration of the case it is necessary to say a few words about the by-laws. The Corporation had on March 12, 1923, in pursuance of section 157 of the Public Health Act, 1875, adopted certain by-laws which were allowed by the Minister of Health on May 9

By-law 7, the one in question, provided that "every person who shall erect a new domestic building intended to be used wholly or partly for human habitation shall provide in the rear of such building an open space exclusively belonging to such building and of an aggregate extent of not less than 150 sq. ft. Such open space to extend throughout the entire width of the building, and the distance across such open space from the line of the rearmost wall of the building to the boundary immediately in the rear of the site to be not less than 15 ft. This distance was to vary, however, according to the height of the building, increasing as the height increased. It was also provided that such open space, for the said distance at least, should be free from any erection thereon above the level of the ground, except a water-closet, earth-closet, and an ashpit constructed in accordance with the by-laws. It was also provided: "In any case where by reason of the exceptional shape of the site of such building the minimum distance across the open space required by this by-law cannot be obtained throughout the entire width of such building, it shall suffice if the mean distance across such open space be not less than the minimum distance so required." We will take the point as to section 3 of the Public Health (Building in Streets) Act first. It was argued for the relators that the Building Committee had no power to consent to a breach of the Statute, even had the plans shown the breach; but the plans did not show it, and there was therefore no consent, and the Corporation's consent came too late. The statutory offence was committed by the erection of the building without their previous consent.



Southampton Harbour Board Offices: The Lobby, First Floor.

MR. E. COOPER POOLE, Engineer and Architect to the Board.

Southampton Harbour Board Offices: The Staircase.

MR. E. COOPER POOLE, Engineer and Architect to the Board.

For the defendants it was contended that failure to remove the building after written notice from the urban authority is a necessary part of the offence, for section (3) provides: "Any person offending against this enactment shall be liable to a penalty not exceeding 40s. for every day during which the offence is continued after written notice in this behalf from the urban authority."

The Court, during the argument on this point, intimated it was prepared to hold that there was an inchoate offence which might have become an actual offence had the Corporation not consented; and in the course of the judgment we find the learned Judge said: "Of course, I assent to the proposition that in a proper case an injunction might be granted, but it is to be observed that a person does not offend against this section so as to be liable to any penalty unless and until written notice objecting to the building is given by the Corporation."

The main point, however, in the case was whether under the section a person shall not "commence" the erection of the building without the written consent of the urban authority. The cases, London County Council *v.* Cross (1892, W.N. 80), Regina *v.* London County Council (61 J.P. 439), and Kerr *v.* Preston Corporation (6 Ch. Div. 463) were cited in support of this contention; the two first were, however, distinguished by the Court from the present case because there no consent had ever been given, and therefore an offence had been committed, and the third was held not relevant to the point at issue. In the second of these two cases, which turned on section 13 of the London Building Act, there is a dictum that *ex post facto* consent would not suffice, but the Court pointed out that that was but a dictum, as there never was consent, and, moreover, in that case the building, being erected at less than the prescribed distance from the centre of the roadway of a street, was illegal throughout. The Court held that although the Building Committee had in fact no power to give a written consent and had approved the plans without knowledge of the difference in the main front wall, as the Corporation, as soon as their attention had been called to the dispute, had given a written consent to the house remaining as erected and being completed, there was no breach of the section. As there had been no breach of the section the Court held there was no ground, of course, for granting a mandatory injunction, such an injunction being only granted where there had been a clear and deliberate breach (Attorney-General *v.* Wimbledon House Estate Co. (1904, 2 Ch. 34)).

Before leaving this part of the case we may point out that this esplanade facing the sea and with houses only on one side of it was treated as a "street" within the Act, which would be in accordance with some of the decisions we cited in our article of August 21 last.

The question of the by-laws was a complicated one, and we regret that space compels us in the present article to refer to it only shortly.

The first point dealt with in the judgment was as follows: Section 25 of the Housing Town-Planning Act, 1919, provides that notwithstanding the provisions of any building by-laws (and the Court held by-law 7 to be a "building by-law") a local authority may during a period of three years (afterwards extended to December 31, 1923) consent to the erection of any buildings erected in accordance with regulations made by the Local Government Board, now the Ministry of Health. The Minister of Health did make such regulations, but they are only concerned with the structure of buildings, not with the question of air-space. The present building complied with those regulations. Subsection (2) enables the local authority to attach to their consent any conditions which they may deem proper as to the situation and sanitary arrangements and protection against fire. Section 40 provides that the expression "building by-laws" includes by-laws made under section 157 of the Public Health Act as amended by any subsequent enactment, and these by-laws were made under that section, which includes amongst other matters the sufficiency of air-space. The Court held that the question of air-space around a building is a matter connected with the building of premises, and that under the above provisions the Corporation had power, so far as the by-laws were concerned, to consent to the erection of this hotel, a power properly delegated to a committee under section 200 of the Public Health Act, 1875.

The Court, however, decided one further point, as it had been contended that the by-law was uncertain and unreasonable, and therefore invalid; and applying the principle laid down in Kruse *v.* Johnson (1898, 2 Q.B. 108), and especially in Repton School Governors *v.* Repton Rural Council (1918, 2 K.B. 133; *The Builder*, November 23, 1917), the Court considered whether the by-law, having regard to the particular circumstances, contained "requirements framed for other purposes and inapplicable to these circumstances," adopting the words of Lord Justice Pickford in the Repton School case. The hotel was being erected on the side of a hill with an open park behind on a higher level and the sea in front, and, as the Court intimated, had ample air and ventilation, and there was evidence both of this and the fact that in hilly places such as this it was quite impossible to determine the level of the ground within the by-law, and the Court held the by-law was inapplicable to the circumstances of this case, and clause 4 relating to the height of the building in relation to the open space was so uncertain that no construction could be put upon it in its application to this case, or, as the headnote to the case states, it was unreasonable.

Lack of space compels us to treat very briefly this point as to the by-law, but we may revert to it on another occasion, as well as to one or two other points. Apart, however from the particular facts of this case and the findings thereon, it suggests one or two general observations. It is obvious that the relators in this case resorted to action through the Attorney-General as for the breach of some statute or by-law because the projection complained of was not such as to enable them to bring a private action, that is to say, there was no such interference with light and air coming to their houses as would amount to an actionable nuisance. But the projection of a new building 8 ft. beyond the front main wall of an existing house closely contiguous to it, if not actually adjoining, must seriously affect the amenities of the latter, curtailing its view, and, where the new house is either east or west of it, cutting off the sunshine. In such circumstances the maintenance of a building line appears the only protection adjoining owners can look for, and if a building line were fixed there would be no discretionary power in the local authority to vary it; but under the Public Health (Building in Streets) Act there is a discretionary power in the local authority to consent to a house being brought forward, and thus it appears not to provide adequate protection.

It is often not the site that occasions the difficulty, but the nature of the building it is proposed to erect on that site. For instance, in a confined site, buildings of a like character to existing buildings could be placed in line with them, but a larger building such as an hotel can only be placed upon the site if brought forward. A fixed building line would render this impossible.

HEATING AND VENTILATION

THE OPEN FIRE

WHATEVER may be said, fairly or unfairly, against the open fire, it is doubtful whether we as a nation shall ever lose our affection for it. From mediæval times the English have been commonly accustomed to the sight of burning logs or coal on the open hearth, and this inherited tradition is so firmly rooted that it would be a difficult thing to get rid of, even if that were desired. It is doubtful, however, whether the most ardent advocate of modern, highly scientific "closed-in" apparatus for warming our buildings would willingly agree to the complete extinction of the open fire—he probably has more than a sneaking regard for it himself! It is an institution pleasantly reminiscent of the past, stimulating sentimental thoughts of predecessors who also sat before blazing open fires, watching the flames leap and the smoke curl. To the historically minded it probably provokes intriguing mental pictures of mediæval halls, with burning logs piled against andirons in the middle of the floor; this, of course, only until the smoke and smother forced our castle-inhabiting ancestors (about the twelfth century) to find a better place for the fire, which was naturally the wall, where a direct outlet could be contrived for the smoke. And when this simple change took place the principle of the firegrate as we know it now was definitely established, making possible all the interesting developments that have since occurred, utilitarian and decorative. From that time onwards the fireplace became the chief point of interest of the domestic interior, and succeeding generations of designers and craftsmen vied with each other in lavishing their skill upon its design and decoration.

Up to Tudor and Elizabethan times the fireplace in this country was customarily little more than a wide and deep recess in the wall, containing iron dogs or a movable dog-grate for burning logs of wood; but with the introduction of coal fuel, during the reign of Charles I, the opening naturally became very much smaller, incidentally providing the architect with more scope for the display of his ability in decorative design, which found expression in magnificent surrounds and overmantels.

The movable dog-grate remained the accepted fuel-container until the eighteenth century, when, however, it was largely superseded by the hob-grate, some extremely fine examples of which were designed by the Brothers Adam. About this time the questions of scientific design and economic fuel consumption began to engage attention, and towards the end of the eighteenth century, after much research, it was discovered that a firegrate, to fulfil its function efficiently, should be small in size, be built of brick or fireclay, and have splayed sides and a sloping back. Not until late in the nineteenth century, however, were these principles generally adopted in firegrate design. Generally speaking, they prevail to-day, though of recent years much progress has been made in such aspects of the problem as economy in fuel consumption, cleanliness of apparatus in use, smoke abatement, and so forth. An important development is the principle of the ventilating air channel, by means of which the cold air is brought up to the temperature of the fire itself, the super-heated air uniting with the smoke and causing it to burst into flame, the fire thus consuming its own smoke.

Fire-grates are obtainable to-day to conform with almost every style or manner of architectural design, and in a variety of sizes and finishes. In a picturesque setting the wood fire is always appropriate, but to look really well the logs should burn upon dogs on the hearth. For wood block fires, basket grates (best suited to large interiors), are the correct form of container. These grates look well not only in picturesque interiors, but in settings of a more formal kind. For small rooms the ordinary fire-grate, with its tile, glazed briquette, or wood surround, cannot be improved upon if the fire is to be an open one. Here, again, a wide variety of styles and finishes is available. One old-established firm produces some excellent "period" fire-grates based upon good models—Elizabethan, Jacobean, Queen Anne, Georgian, Chippendale, Adam, Louis XV and XVI, Empire, &c. This same firm specialises in rustless steel fire-grates, which are a veritable boon to the housewife who wishes to conserve her muscular energy.

The barless type of firegrate has firmly established itself in popular favour by reason of its all-round efficiency and cleanliness in use. Several excellent types are obtainable, each having some special point of interest, one such being the formation of the bottom, which is "swept up" to the front to facilitate the removal of ashes.

In stringent times such as the present it is only natural that the designers of heating apparatus should devote a good deal of attention to the all-important question of economy, not only of fuel consumption, but of fuel employment. Hence, during the past few years we have seen the production of many "plural purpose" firegrates. One such warms the room with its open fire, and by means of a boiler at the back supplies hot water to radiators in different parts of the house. Another, in conjunction with a suitable hot-water radiator installation, will heat an entire house with a continuously burning anthracite open fire. Yet another type of double-duty apparatus acts as an open fire and also cooks food and heats water, while another, interposed between adjoining rooms, acts as a living-room grate on one side and a scullery cooker on the other.

To describe all the types of firegrates available to the modern architect and builder would occupy more space than we can afford, but enough has been said to show that the open fire is a flourishing institution and is likely to remain so for many years to come.

VENTILATION AND WARMTH

By F. BROADHURST CRAIG.

MUCH has been written and said about central heating and ventilation in this country, and still it is usually referred to as central heating *and* ventilation. The basic factor of comfort and health would appear to have been—as yet—unrealised. The ideal, surely, is to reproduce *inside* our buildings atmospheric conditions similar to those which appertain *outside* when one says, "What a wonderful day!" That, substantially, is the goal. After all, what is desired inside any building (unfortunately one cannot control outside circumstances) is the maximum amount of atmospheric comfort compatible with initial and running cost. The installation of a system of heating by such of the present-day methods which do not properly take into account the importance of ventilation and relative atmospheric conditions, cannot be considered to approach the ideal. If it is all the owner can afford, good enough. A system of open coal or gas-fires; an anthracite stove or two; a few radiators, served from the boiler which supplies hot water for baths and dish-washing, will do; or, if the particular building is of larger size, an independent heating boiler will suffice. This is certainly beyond what has hitherto been achieved in most of our buildings, and one must recognise that considerable progress has been made, though we must also realise that we are still a long way short of perfection. Broadly speaking, ventilation and warmth are inseparable, and if we add a knowledge of the third factor of humidification, we have all that it is humanly possible to produce in this respect.

In dealing with the subject in relation to a private dwelling, one does not need to be unduly concerned about the question of air-conditioning proper. The design of most modern houses is such as to allow of quite adequate ventilation by the natural means of windows and fireplaces. The main objective of central heating in such a building is to ensure the absence of disagreeable draughts from the hall-door and corridors, and to provide warmth in the bedrooms—gas-fires serve the latter purpose well—with two or three hot-water radiators in the hall and passages. English folk generally do not like the close, stuffy atmosphere of American and Continental confrères; they prefer the natural air movement set up by the opening of windows and doors, and in this connection they appear to conform with the most recent medical thought on the healthy effect of accustoming oneself to draughts of not too cool air currents.

A different condition of affairs arises in regard to larger buildings—offices, theatres, picture houses, assembly halls, and so on. In these cases, particularly, ventilation should be the first consideration, plus warmth. Temperature as indicated by the ordinary dry bulb thermometer is neither here nor there as far as comfort is concerned, without the other two equally important factors of humidity and air movement.

It is only within the last few years that any attention has been paid to this consideration. In America, where the climatic conditions call for more consideration than in this country, very exhaustive investigations have been made in order to ascertain the degree of temperature, relative humidity, and velocity of air movement necessary to produce the maximum of comfort. The results of these tests, conducted under the direction of the leading medical and scientific universities, have been carefully tabulated in the form of a "Comfort Chart," which has made it possible to determine the relative value of the three fundamental factors. The effect has been to revise the previously recognised standards of heating and ventilation.

There is no reason why it should not be possible to reproduce inside our buildings conditions very closely approaching the most pleasant natural atmosphere. Actually what happens with badly designed methods is that a room is heated without the addition of moisture or fresh air, beyond that which can find its way through the cracks and crevices around the doors and windows. In consequence, the relative humidity of the air is appreciably decreased and a sensation of dryness is produced owing to the more rapid evaporation of moisture from

the skin and respiratory channels. Attempts are sometimes made to restore the relative humidity by "evaporating" trays, or pots of water, around the radiators and gas fires; but when it is remembered that raising the temperature of air from 40 deg. F. to 60 deg. F. reduces its relative humidity by about 50 per cent. it is obvious that these cannot be adequate. Air at 60 deg. F. (dry bulb) will contain 5.8 grains of moisture per cubic foot when fully saturated; whereas at 30 deg. F., 1.9 grains per cubic foot are sufficient to produce 100 per cent. relative humidity. Air on being heated continues to absorb moisture until it becomes saturated, and unless this moisture is supplied artificially it will be abstracted from the occupants and furniture contained in the room.

The absence of air movement is another contributing cause of the feeling of unpleasantness in a badly heated room. Apart from the open fire, which acts as a natural ventilating shaft by means of the chimney (so drawing air into and through the room), nearly all other heating apparatus produces little or no air movement, except the very slowly-moving convection currents. Air motion is essential to comfort. One's feelings of oppression on a still, muggy, or thundery day are due to the film of moisture arising from the skin emanations not being freely removed from the body. This retards the natural function of the skin and throws more work upon the other excretory organs, with resultant inertia and consequent feelings of fatigue from the lessened cleansing of the blood stream. These physiological considerations have a decided bearing upon the question of heating and ventilation, and when their importance is properly appreciated this commonly used expression will no doubt be changed to that heading the present article.

The main object is to provide for the comfort of the occupants of a building. The first consideration should, accordingly, be to provide a supply of suitably "conditioned" air to each occupant, and the calculations should, therefore, be based upon the number of people likely to occupy any particular room, with allowance for a definite and constant volume of air supply per person. During the periods when the building is unoccupied a system of direct heating may be employed to keep the building warm and avoid too long in "heating-up." This would be needed in the case of large single-room buildings, like churches and assembly halls. The volume of air per occupant having been determined, the relative humidity and temperature calculations will then follow according to the exposure factors of the particular room.

A properly designed installation of this kind will call for a dual system of distributing ducts, one to convey the heated air and one for the cold humidified air. The hot and cold air distributing ducts would be interconnected at their point of entry to the various rooms, in the form of a mixing chamber with regulating dampers, to admit of the supplies of hot and cold air being regulated at the will of the occupants according to their requirements and the outside atmospheric conditions. The usual extract air duct should be led back to the main chamber to enable the exhaust air to be purified and re-heated. The main chamber would contain the air-washers and humidifiers, heater batteries, fans and boilers, and these should be fitted with a system of automatic temperature and humidity control.

HOUSE HEATING

UNDER this title* Miss Fishenden has produced a book which is an extremely valuable contribution to the question of fuels. A very large amount of the information has been collected and annotated for the first time. It appears in a readily understandable form, and contains many facts which, while being of the highest importance, are not by any means universally known. Comparisons are made between the use of wood, peat, coal, anthracite, oil, coke, gas, and other materials as means of obtaining heat.

In connection with the manufacture of gas it will come as a surprise to many to find that the efficiency of the present systems of manufacture is far less than might have been expected. Quotations are given, showing that 47.8 per cent. of the original heat units is sold in the form of coke, 11.4 per cent. is absorbed by the coke for producing gas, 21.3 per cent. is the proportion of gas, 6.1 per cent. of tar, and the remaining 13.4 per cent. liquor, sulphur and loss. Even in the most efficient of modern gas plants the number of heat units in gas is not greater than 25 per cent. to 35 per cent. of the total heat units in the original coal. Another authority states that of 100 heat units in the original coal, 50 are returned to the solid fuel market as coke, 5 are recovered as tar, 22.5 are lost in manufacture and distribution, and 22.5 reach the consumer as gas. These figures are sufficient to explain to the architect the reason for the high cost of gas heating, which he finds to be typical of all cases in which he is able to compare gas with coke or coal heating apparatus.

Following these figures, Miss Fishenden devotes a number of pages to the discussion of revised or improved processes for increasing the yield of gas or increasing its efficiency when used in gas-heating apparatus. The author points out that the use of low-grade gas has become possible by recent improvements in gas burners. As a result of this development, the decision to charge for gas by the therm arose, which decision Miss Fishenden defends in a very logical manner. The use of low temperature carbonisation of coal yielding a certain amount of gas and leaving a brighter burning material than coke seems to possess possibilities which have not yet been completely investigated.

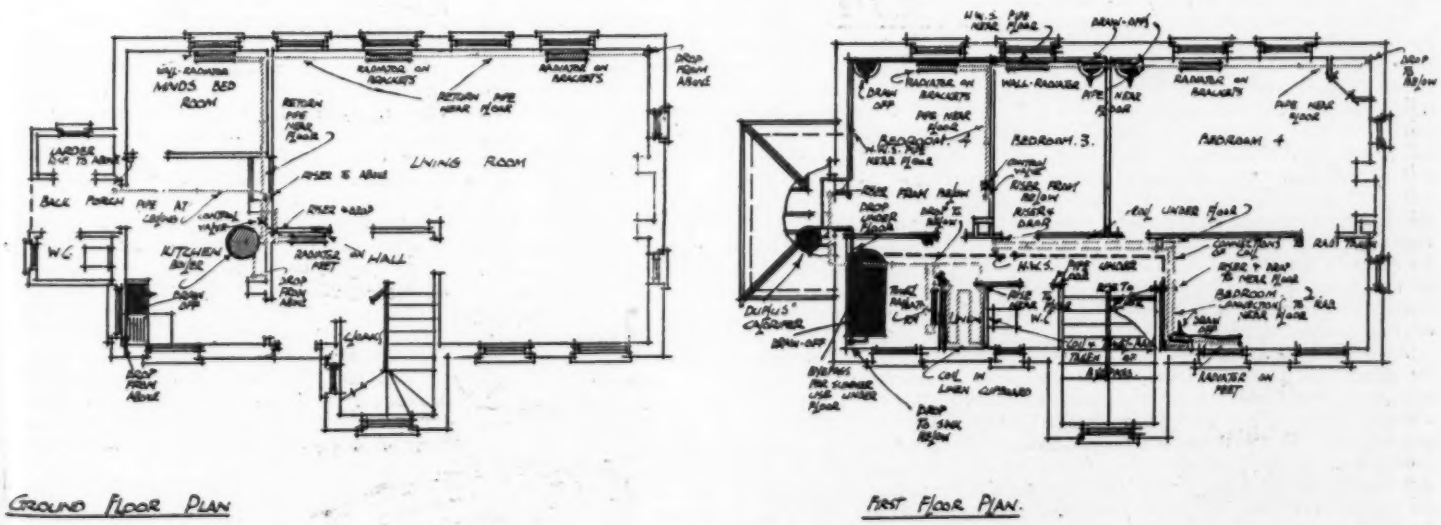
Proceeding further to examine the generation of electricity, it is found that an even higher proportion of heat units is lost, and it is stated that the average thermal efficiency of the generation of electricity is only 12 per cent. of the value of the original number of British thermal units in the coal used. For the best station in the country, the efficiency is only 18 per cent. The contention of some electrical enthusiasts that huge power stations at a few points would involve an enormous increase in the efficiency of the current produced is not, apparently, borne out by existing figures. Recent improvements in the efficiency of generating stations have, however, resulted in a very large total saving of fuel.

The second section of the book is devoted to a study of the development of the modern grate and of the application of coal to the heating of rooms. Some interesting information is given in connection with Teale's rules for fire-grate construction, most, if not all, of which have passed into general practice in the construction of modern fire-grates. Harcourt's rules do not entirely agree with those of Teale, but are sufficiently consistent and logical to make their differences easily reconcilable.

There is some interesting information upon the quantity of air which passes through a normal room heated by an open fire, and also upon the effect of radiation upon the human body. The cooling effects of draughts are insisted upon, as is also the incomplete combustion which takes place in coal burning in an ordinary grate.

The effects of patent preparations on the efficiency of coal fires is shown to be negligible, and chemical analyses of two patent preparations are given showing that they consist almost entirely of common salt. The exhaustive way in which various aspects of the coal fire are treated, and the very concise statements that

* "House Heating," by Margaret Fishenden, D.Sc., F.Inst P. Witherby, 25/- net.



Hot-Water Supply for a House at Cholesbury. MESSRS. T. P. BENNETT & SON, Architects. (*See p.* 472.)

are made, provide most valuable data for the architect, as well as a basis for further investigation, the importance of which it is impossible to exaggerate.

Chapter III is devoted to the history, design and present uses of kitchen ranges. The result of heating in ordinary brick-set kitchen ranges, quoted from Barker's "Tests on Ranges and Cooking Appliances," is very illuminating. According to this statement 3 per cent. of the heat is communicated to food, 7 per cent. to the hot-water supply, and the remainder is lost in the air of the kitchen, absorbed in the brickwork, or disappears up the flue. Miss Fishenden points out, however, that the kitchener is asked to perform several diverse operations, and cannot be expected to show a high efficiency in each. Its "general utility" accounts for its continued popularity.

The book contains excellent statements upon the comparative merits and uses of the average kitchener, either "portable" or otherwise, and various types of combined sitting-room fires and ovens, and the use of independent boilers, with or without the addition of cooking ovens. Miss Fishenden's comments in these matters are extremely sound.

Chapter IV deals with gas for heating purposes, and points out the immense impetus which was given to the use of gas fires by the invention of Bunsen burners. It explodes many of the objections to gas fires based upon their presumed lack of ventilation, the supposed emission of unpleasant smells, &c. It shows that many of these criticisms are due to prejudice surviving from the early days of the gas-fire, when such defects existed to a serious degree Sections of this chapter which are very interesting refer to the effect of carbon dioxide and carbon monoxide, and the effects of oxides of nitrogen upon health. At the end of the chapter extracts are given from reports upon the death-rate due to accidental deaths from gas-poisoning, which prove that it is almost negligible.

The use of gas for cooking is discussed at considerable length, and it is shown that whilst the production of gas has a relatively low efficiency, gas apparatus has a very high efficiency, and to a large extent balances the cost of the production. If it were possible substantially to improve the efficiency of production and only slightly improve the efficiency of gas apparatus, the use of gas for all heating purposes would be advanced tremendously. One of the most valuable contributions of this portion of the subject is found in the form of a definite comparison between the cost of cooking by gas and by coal, and a further comparison of the cost of gas used for heating water. The total quantity of gas sold by authorised undertakings was 74,000,000,000 cubic feet in 1884 and 241,000,000,000 cubic feet in 1920, an increase of rather more than three times.

Short as has been the history of electricity for heating, modern electrical heaters give an efficiency of 100 per cent. As has been before stated, the production of electricity shows an efficiency of 12 per cent. to 18 per cent., and it follows that electric heat is from six to ten times dearer than heating by coal. Coal-heating apparatus, however, has an efficiency of approximately 50 per cent., and this difference, therefore, is reduced to 3 to 5½ times.

Miss Fishenden's work will undoubtedly come to be regarded as a standard volume. It covers a wide ground, but is perhaps unfairly restricted so far as its title is concerned as much of the information is applicable to heating schemes of all descriptions, and much of the experimental work which has necessarily preceded its production appears to have almost a world-wide importance.

---

† Mr. Edwin Gunn's book in the *Country Life* series, "How to Heat Your House," suffers somewhat by comparison with a comprehensive work like that of Miss Fishenden. Nevertheless, it contains in a concise manner a great deal of very valuable information upon various kinds of fuel and the methods by which they can be applied to modern house heating. Illustrations of various types of heaters convey an idea of their use and value very rapidly, and altogether this is an admirable little book for those who require a short survey of the subject. It is a defect in a book of this character that advertisements are added of individual examples of the types of apparatus referred to.

† "How to Heat your House," by Edwin Gunn, *Country Life*, 2/6.

THE PROGRESS OF GAS HEATING

As year succeeds year, it might be thought that the speed of the increase in the use of gas for heating in its various forms would slow up, but this, at present, is far from being the case. On the contrary, its progress continues unchecked; indeed, it is constantly gaining impetus. As some proof of this may be quoted the fact that one large gas undertaking alone had an increased output of nearly 30,000 gas fires in the year 1923 and nearly 40,000 in 1924.

The causes of this increase are many, but the most outstanding are the ever-present servant problem, which remains—and, apparently, will always remain—insoluble; and the fact that the present generation have really begun thoroughly to appreciate the value of having heat in any room instantly and economically available and controllable on tap. Whether domestics who would be willing to light and clean up after solid fuel fires are—or become—available or not, this latter aspect of the case will always remain unaltered, and will, indeed, become an increasingly potent factor.

It would appear that the application of gas for firing steam and hot water boilers for the provision of heat to batteries of radiators used in conjunction with ventilating systems is beginning to increase, the likelihood of which has been indicated in *The Builder* from time to time. In spite of the increased fuel cost, arising out of the use of gas instead of coke, its convenience and complete and automatic adaptability and the saving of space and other advantages accompanying its use are causing it to be adopted for a number of installations, some of which are of a magnitude which would have been undreamed of a few years ago with gas as the heating agent.

As some confirmation of this, it need only be mentioned that we hear of one such contemplated installation for which gas has been chosen, where no less than six million B.Th.U's. per hour will be needed to warm the air for the ventilation of the premises. For this purpose, gas boilers with a total maximum consumption of 15,000 cubic feet (75 therms) per hour are to be fixed on the roof of a large building. Architects will readily realise the potentialities attached to such an installation when the value of space in the basements of modern offices, shops, or stores buildings, is considered. There are, of course, numerous cases where coke as the heating agent for central heating systems is supreme—for instance, when low fuel cost is the prime factor to be considered and/or where labour and space are readily available.

A further modern feature is a combined coke and gas-fired system, in which gas is used for domestic hot water for sinks, baths and so on during the summer; and in the winter, coke is used for all these, and, in addition, one or more radiators. Another system more frequently met with involves the use of a coke boiler for central heating purposes, while gas fires are also installed as auxiliaries in each room. The latter are appreciated for their cheery effect, and they are available for use between seasons when the coke boiler is not in operation.

The fitting of gas fires against existing coal grates and to specially prepared economy flues, however, still accounts for by far the greater proportion of the growth of gas heating. Details of several installations, combining both utility and beauty of appearance, and which are likely to be of special interest to architects and builders, follow. Reference is also made to an instance of the use of gas as the sole heating agent for a small central heating installation.

The Overseas League.

Some very interesting gas installations have recently been put into the several buildings now occupied by the Overseas League. This League has become increasingly important since it was founded by Mr. John Evelyn Wrench in 1910. Owing to his untiring efforts this non-party, non-sectarian society of men and women, (British citizens) in and from all parts of the British Commonwealth of Nations, has progressed from the occupation of one small room to the possession and occupation of several large modern buildings in the heart of London's Clubland. Its headquarters are at Vernon House, Park-place, St. James's-street, where a system of central heating by hot water radiators heated from a coke-fired boiler was installed as the main source of heat.

The radiators, where they are fitted in the beautiful rooms contained in this fine old house which was originally owned by Lord Hillingdon, are masked or hidden behind ornamental gratings, suitably constructed to tone with the decorations of the rooms in which they are fitted. In addition to the central heating system, however, gas fires have been fitted to all the fireplaces ready for use at a moment's notice as auxiliaries. Besides supplementing the heat from the hot water radiators, the gas fires afford a bright and cheery appearance. Their brightness naturally appeals to Englishmen who have spent years away from home, and they remind our kinsmen from the Dominions of the old open fires of the past. There are twenty-five gas fires all carefully chosen and fitted to conform to the grates and their surroundings. The success which has been met with in this direction will readily be realised by a glance at the photographs which illustrate several of these fires.

Fig. 1 is a photograph of the "Adam" grate in the Council Chamber and Reception Room, where not only is there an "Adam" mantel, but the grate itself is of steel in "Adam" design. It will be seen that the gas fire is also of "Adam" design. In order that nothing shall clash, it is made in "armour bright" steel, and the small opening, which would have been left above the bars of the coal grate, has been covered in by a steel plate backing, finished to match. The illustration also shows the photographs of H.R.H. The Duke of York, President of the League, and the Duchess of York.

Fig. 2 shows the drawing-room fireplace, which is of the Georgian period. It was decided in this case to retain the old dog grate, and a modern type of gas burner fire was accordingly fixed therein, which, it will be agreed, has not detracted from the appearance of the fireplace or the grate in any way.

Fig. 3 is a photograph of the very beautiful fireplace in the dining-room. This also is of the Georgian period, with Ionic columns and capitals, and above the grate opening will be

seen Lord Hillingdon's Coat of Arms. In this case, again, it was considered undesirable to alter the character of the original dog grate, so a gas fire was successfully fitted to its interior. At Vernon House there are also several gas steam radiators fixed in those corridors where there are no hot-water radiators, and gas cooking apparatus has been installed to provide meals for no less than 150 persons.

At "Club House," adjoining, there is also a central heating system, supplemented by seven gas fires, and gas cooking apparatus is installed capable of cooking for 80 persons. Overseas House, also adjoining, is chiefly used for sleeping accommodation, and here there is central heating and six gas fires, with gas cooking apparatus for the provision of breakfasts.

The Institute of Hygiene.

If further proof were necessary that gas fires and other gas appliances are perfectly hygienic, it has again been afforded by gas being installed for heating, water heating and cooking at the new premises of the Institute of Hygiene. This Institute was founded in 1903, and from that date till recently it has occupied premises at 33 and 34, Devonshire-street in the Harley-street area of London. Some time ago it was decided to transfer the activities of the Institute (which include research work and a permanent exhibit of hygienic products and appliances) to more commodious premises in Portland-place, the formal opening of which was carried out on June 5, 1925, by H.R.H. Princess Mary Viscountess Lascelles. The gas installation include gas fires (13 in all) in the various rooms, and here again these appliances had to be carefully chosen and fitted to conform to the very fine series of fireplaces which were in existence on the premises.

In addition to the gas fires for the general heating of the building, there is a hot-water and central-heating installation of rather unusual character. A Potterton combined coke and gas boiler is connected to radiators, with a heating surface of 75 square feet, installed in the hall and basement, and the same apparatus also supplies domestic hot water for scullery, cleaning and lavatory purposes.

In the summer when the radiators are not required, the gas boiler is used to furnish the domestic hot water, as a result of which an intermittent demand is economically met, while the kitchen is not unduly heated. During this period the coke boiler is merely used as an incinerator, but in the winter when the supply to the radiators is brought into play by the operation of valves, the coke boiler is used as the heating agent, because it is more economical than gas for the heavier and more constant load.

The domestic hot water supply is installed on the cylinder system, with the storage in the kitchen quite close to the apparatus, and the cylinder is fitted with a Potterton cut-out valve, so that the whole or only a portion of its contents may be heated as desired, thus further economising in the consumption of gas when this is in use during the summer months.

Some interesting work was carried out in connection with the conversion to gas equipment of the fireplace in the toilet section which is situated on the ground floor of the building. The mantelpiece and jambs of this fireplace are of Verde-antique marble, and the hearth and curb of Statuary marble. As the fireplace called for special treatment it was decided to cover the whole of the space between the jambs with a sheet of Scagliola marble, which was specially made by Messrs. Bellman, Ivy & Carter, of Marylebone. A suitable opening was left in this sheet through which the flue outlet of the gas fire was carried to convey the products of combustion to the chimney. The marble backing having been made of the correct size, it was carefully fitted into the opening, its surrounding edges being plastered to ensure a firm setting. The gas fire is a Davis "Louis Seize" pattern, which was chosen to harmonise with the character and decoration of the room, including the ceiling. The fire is finished in electro-silver with gold mountings, and an added artistic touch is given to the whole by the gas fire supply pipe being lacquered steel bronze to tone with the finish of the fire. The flooring of this room is of a patent rubber supplied by Spencer Moulton & Co., Ltd.

Fig. 4 illustrates the Lecture Room on the first floor of the Institute of Hygiene. Here, again, a very fine fireplace had suitably to be treated for the installation of a gas fire in front of the coal grate which had previously been in use. The mantelshelf, jambs and hearth are of Statuary marble, as are the statuettes and lamp-holders seen on either side of the fireplace. The gas fire chosen and fitted is a John Wright's "Kenilworth," in electro-silver finish, and again a backing of Scagliola marble was fitted and the gas supply pipe was lacquered to tone with the fire. These backings may be obtained in any shade, either in plain, or any pattern of marble, and in any size needed to fit a particular opening.

Other items of gas apparatus play a large part in the equipment of a model kitchen, which is one of the special features of the Institute; and gas cooking stoves are also installed in a demonstration room, in which, from time to time, hygienic and practical cookery is carried out in conjunction with suitable lectures, which are given by skilled operators. Full descriptions of such apparatus, however, are not called for in a number which is specially devoted to the subject of heating and ventilating.

The Reconstructed Westminster Hospital.

Westminster Hospital was recently reconstructed and modernised under the direction of Messrs. Adams & Holden, FF.R.I.B.A. Among the many improvements was the reorganization of the heating and cooking arrangements. As a result, the whole of the building is warmed by steam-heated radiators supplemented by gas fires; while gas and steam are

Fig. 1.—Gas Fire in Council Chamber, Overseas League.

Fig. 2.—Gas Fire in Drawing Room, Overseas League.

used for cooking in the main kitchen. A gas cooking stove is also fitted in each ward kitchen, and gas appliances of various kinds are used for sterilizing and in the laboratories. The heating installation is of the greatest interest at the moment, however, and it is worthy of note that there are no less than 181 gas fires now fitted in the hospital, one or more being installed in every general and private ward in the building.

The steam radiators which are also installed throughout the building are heated from two large coke-fired boilers, but as such heating (by high temperature convection), has a tendency to overheat the air, it was arranged that the radiators should not be large enough to provide sufficient heat satisfactorily to warm the wards and other rooms in which they were to be placed, and it was therefore decided to instal gas fires to supplement their heat to the desired degree. The gas fires also serve another purpose, inasmuch as their cheerful radiance has a beneficial psychological effect on the patients. The rooms of the resident medical staff, the matron's rooms, and every one of the nurses' bedrooms (sixty in number) are equipped with gas fires.

Space will not permit the inclusion in this article of illustrations of the fireplaces and gas fires in the various wards and rooms, but reference may be made to one of the adult wards, where the gas fire is a Davis "Pandora," a design which was chosen on account of its simple though artistic lines. The coal fire opening has been entirely filled in behind the gas fire with a backing of "Asbestone," which is screwed (with wood screws) to a framing of wood battens. A suitably prepared opening is left in the backing through which the flue from the gas fire passes to the chimney.

Fig. 4.—Marble Fireplace adapted for Gas Fire, Lecture Room, Institute of Hygiene.

The description which has been given of the very comprehensive gas installation at the hospital is necessarily lacking in detail but, brief as it is, it will serve to give an insight into the careful attention which is paid by the governing bodies of great hospitals to the comfort and well-being of their patients and staff.

Fig. 3.—Fireplace and Gas Fire, Dining Room, Overseas League.

University College of London, Gower-street.

An interesting installation of the central heating type was recently carried out at the above premises to the instructions of the architect, Mr. F. M. Simpson, F.R.I.B.A. It is a practical illustration of the accuracy of the statement which has from time to time been put forward that, while up to the present it is by no means the usual practice to use gas as the heating agent for central heating installations of magnitude, there are cases of somewhat minor character where such a convenient and readily controllable fuel as gas is indicated.

In this case there were nine animal houses (in which such animals as dogs, rats and mice are kept under scientific observation) to be heated to a regular and constant temperature of rather more than 70 deg. F. These requirements were fulfilled in the following manner:—Two gas-fired boilers of suitable capacity were installed, and from these were run the hot water supplies to twelve National Radiator Company's "Classic" radiators which were distributed in suitable sizes and capacities in the various houses.

When the boilers are lighted the desired temperature is very quickly reached, and it is maintained steadily and constantly for an indefinite period, the gas supply to the boilers being automatically controlled and the gas consumption thus kept to the amount necessary to maintain the heat. It is worthy of note that the apparatus needs practically no attention. The regulation is achieved by the action of a Potterton Air Thermostat which has been previously described in *The Builder*. If and when the air temperature increases beyond the desired degree, the air thermostat which is fitted on the gas supply pipe passing through the houses on its way to the boilers at once comes into operation, and actuates a valve which temporarily shuts down the gas.

When, owing to this reduction in gas consumption, the temperature begins to fall, a reverse action takes place, and the gas supply is automatically again increased, the balance always being maintained by this simple device, which not only keeps the temperature at the desired degree, but at the same time ensures the strictest economy in gas consumption.

The contract for a new church to be erected at the corner of Beswick-avenue and Columbia-road, Ensbury Park, Bournemouth, has been let to Messrs. Marshall & Bower. The architects are Messrs. George Baines & Son, FF.R.I.B.A.

THE PANEL SYSTEM OF WARMING

A SYSTEM of warming which depends for its efficacy on the complete concealment of the warming agent is known as the Panel system, and although it has been used and developed in important buildings for the past fifteen years, the fact that it has been adopted in four of the largest buildings now being erected in the United Kingdom renders a description of the principle upon which it operates and the method adopted in its installation of special interest at the moment.

With this system the occupants of the building to which it is applied receive the warmth necessary for their comfort directly from the source in the form of radiant heat. Now, in the minds of most people the term "radiant heat" connotes a source of warmth which is luminous, but it is a mistake to suppose that heat can be radiated only at such temperatures as produce visible radiation. Heat is radiated from all bodies whose temperatures are above absolute zero, and of three bodies at different temperatures radiation is absorbed by the body at the middle from the body at the higher temperature and radiated to the body at the lower temperature. Thus a human being standing in a room three of the walls of which are at, say, 55 deg. Fahr., while the fourth is at 90 deg. Fahr., will be conscious of a sensation of warmth from the warm wall even although it is actually at a temperature lower than blood temperature, and this warmth will reach him even though the intervening air be at a still lower temperature of, say, 45 deg. Fahr., because radiant heat, being an etheric phenomenon, passes through air without appreciably warming it. Such an effect is common experience on a sunny day in winter, when, even with an air temperature below freezing point, the warmth of the sun, which is radiant warmth, is plainly felt through the clothes.

In the Panel system of warming, the warmth is distributed by extended surfaces in the form of portions of the ceilings, walls and sometimes of the floors, which are maintained at a suitable temperature, generally about 120 deg. Fahr., by warm water circulating through pipes embedded in the concrete, plaster or similar plastic constituent of the structure or finish. The warmth is radiated in straight lines in all directions exactly as in the case of luminous radiation, and is reflected or absorbed more or less by the surfaces upon which it impinges. Such of the radiation, therefore, as is not absorbed by the occupants of a panel-warmed room is reflected back and forth by the walls, floor and ceiling and furniture, all of which in due course reach a temperature at which they no longer cause loss of warmth on the part of the occupants, who thus experience a quality and degree of comfort comparable to that provided by mild sunshine.

It is important to observe that this degree of comfort is obtained without appreciably warming the air; there is, therefore, with this system no sensation of stuffiness, dryness of the throat, and lassitude, nor is there the consequent dissemination of dust and deleterious germs. And since there is no stratum of heated air at ceiling level, there is no loss of heat due to the escape of this hot air from windows, doors and other openings, and the avoidance of this loss results, in conjunction with the moderate temperature at which the water is maintained, in a considerable economy in fuel.

As stated above, the panels consist of jointless coils or grids of small bore pipe embedded in the lower surfaces of the ceilings or the inner surfaces of the walls; the warm water is caused to circulate in these coils in exactly the same manner as in an ordinary low-pressure hot-water heating system; accelerating pumps are used when necessary, but gravity circulation is frequently adopted where the lay-out permits.

Where the floors are of concrete, either solid or in one of the many forms involving the use of hollow tiles or beams, the pipes are cast in the concrete, being laid in the shuttering before the concrete is poured; in many cases, it is possible also to embed the mains, risers and circulating branches in the concrete casing of the steel structural members, thus completely concealing the whole of the pipework. This method is being adopted at the two large buildings now in course of construction on the Devonshire House site, at the new Carmelite House, and in the new India building at Liverpool. In such installations, of course, all joints are welded and the work is subjected to stringent tests before the concrete is cast. Moreover, great care and experience are required to ensure that the arrangement of panel coils and circulating pipework is such as will enable the system to vent itself automatically.

When the construction does not permit of casting the pipes in concrete, the panel coils may be applied to the surfaces of the ceilings or walls and encased in the plaster; or, if marble, slate, tiles or similar wall finishes are to be used, the panel coils are rendered with cement, which forms a bed for the surface material.

Panels cast in concrete require no more than the normal thickness of plaster to cover them; but when the pipes are applied to a hollow tile or wood joist ceiling or to brick walls, plaster to a thickness of about 1¼ in. is necessary. In both cases, precautions have to be taken by the plasterer in accordance with instructions prepared by the patentees, as a result of their experience, in order to ensure that the plaster shall not crack.

The use of the ceiling as the source of warmth, while it may appear somewhat revolutionary, has been marked by conspicuous success. Not only does it emphasise the similarity between this system of warming and sunshine, but it has several practical advantages. Not the least of these is the fact that it enables maximum use to be made of the walls and floor, a feature of considerable importance in department stores and similar establishments. It renders possible the erection and dismantling of partitions in large apartments without disturbance of the heating system, and without the necessity for rearrangement, which is of great utility in office buildings, workrooms and warehouses.

To hospitals, the system is peculiarly applicable owing to the absence of all exposed pipes, radiators, and similar lodgments for dirt and dust, and to the hygienic value of the quality of warmth which it provides. The new Obstetric Block at University College Hospital, and the extensions of the Bolingbroke Hospital, Wandsworth, are instances of hospitals in which it is being used. The patentees are Messrs. Richard Crittall & Co., Ltd.

Interior of Messrs. Harvey & Nichols' Premises, Knightsbridge, fitted with the Panel System of Warming.

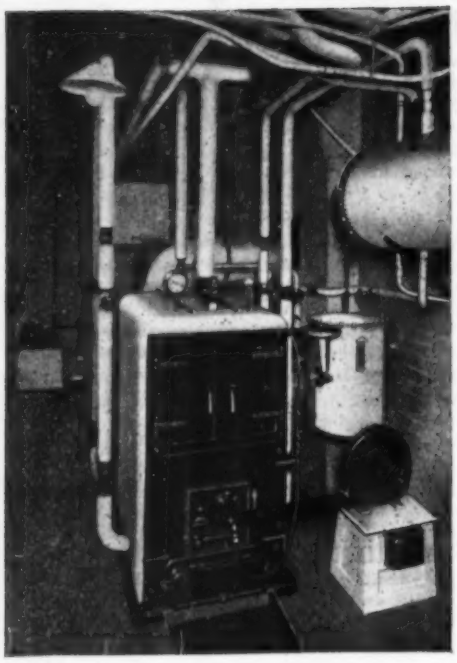
OIL FUEL FOR CENTRAL HEATING

Oil fuel is being increasingly used for boiler installations with completely satisfactory results. In North America, the efforts made to evolve an efficient apparatus have met with a large degree of success, and there are now thousands of oil-fired central heating installations in daily operation in Canada and the United States. The technical staff of Messrs. Shell-Mex, Ltd., in co-operation with oil burner manufacturers and heating engineers, and after three years of experiment, have designed a British plant which can be applied to any ordinary central heating boiler and which is sufficiently simple and reliable to be left unattended for long periods without the risk of a breakdown.

The plant, which is automatically controlled, can be used either with the ordinary cast iron section boiler fired with coal or coke or with the new types of central heating boiler, specially designed for oil fuel, which are now produced by the leading heating plant manufacturers.

The accompanying illustration shows a hot water central heating plant installed in the basement of an old house of the Georgian period, now used as the London offices of a life assurance company. The system of working, summarised, is as follows:—

(1) An air blast at low pressure is provided by a small electrically driven fan, the operating cost of which only amounts to a fraction of a penny an hour. This current of air operates a rotary oil atomiser (or Rotamisor) which



An Oil-Burning Hot-Water Central Heating Plant.

converts the liquid fuel into an oil mist. The oil mist is intermingled with the correct proportion of air and passes forward into the furnace of the boiler. Perfectly smokeless combustion is obtained although the consumption of oil may be varied from a quarter of a gallon to four gallons an hour. Thus the system admits of extreme flexibility and is capable of dealing with any fluctuations in demand likely to be experienced in this country.

(2) An automatic valve, by means of which the oil feed is regulated according to the temperature of the outgoing water, is fitted to the oil supply pipes.

(3) If the electricity or the air supply should fail, a simple automatic device immediately cuts off the oil supply to the furnace and it is not renewed until the fault has been remedied. This eliminates all danger of oil running into a furnace in which the flame has been extinguished.

(4) After the burner is lit in the morning the temperature of the water rapidly rises until a pre-determined point is reached, say 180 deg. F. This figure can be varied by setting a pointer against the desired temperature as indicated on a graduated scale. On reaching the set temperature, the automatic valve comes into operation and the oil supply is cut down until the burner is passing just sufficient oil to maintain the water temperature at the determined degree. Should the temperature of the water rise owing to radiators being shut off or changes in atmospheric conditions, the valve automatically reduces the oil supply and, conversely, should the temperature of the water fall below the critical point, the valve immediately increases the oil supply until the point of balance is again reached. It is thus possible to meet the widest variations in the demands on the plant without the necessity for an attendant.

In the installation illustrated the boiler is heating water for 56 radiators, the pre-determined temperature being usually 180 deg. F. To maintain this temperature the burner consumes an average of two gallons of Mex fuel oil an hour. Deliveries of oil are made by connecting a hose pipe from the tank wagon to a pipe connection in a manhole in the pavement.

Messrs. Shell-Mex, Ltd., do not manufacture oil burning plant, but maintain a special department for the purpose of advising on the selection of the most suitable oil burning apparatus for each individual requirement.

SOME NOTES ON HEATING EQUIPMENT

The "Ideal" School Radiator.

The National Radiator Co., Ltd., have issued a leaflet dealing with a radiator which has been specially designed to meet the requirements of schools and other public buildings where efficiency and cleanliness are of first importance. The smooth surfaces of their "Ideal" school radiator and the wide space (1¾ in.) between the sections, as well as that below the bottom hub, enable all parts, including the floor beneath, to be easily cleaned. (If desired, the radiators can be supplied without feet, for fixing on brackets to the wall, leaving the floor entirely clear.) The "Ideal" concealed valve gives the advantage of a top feed to radiators having supply and return connections at bottom, this being secured by assembling the first and second sections at bottom with a solid malleable iron nipple, so that the water upon entering rises up the first section before passing through the radiator under control of the valve. The top radiator nipple is faced and forms a seating for the valve, which is fitted in the top radiator hub, and projects only a short distance: the body thus being concealed, a neat appearance is obtained.

Rustless Firegrates.

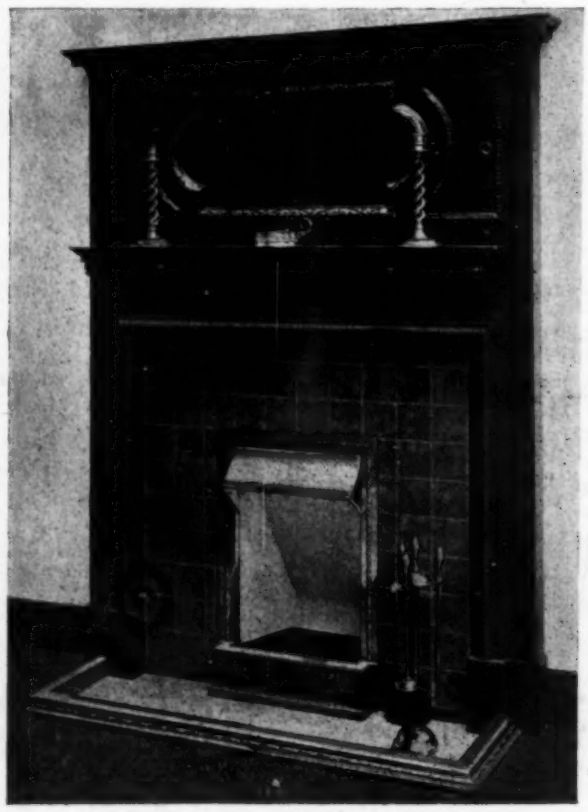
The average Englishman does not always pay sufficient attention to his firegrate which, after all, is or should be the most arresting feature and, therefore, the centre of interest of his room. The Carron Co. has "brightened things up" (if the term may be allowed) by the introduction of the rustless steel firegrate, which, on account of its metallic lustre, invests the fireplace with a new charm and brightness. It imparts a distinctiveness to the room, and is specially in sympathy with period decoration. The housewife too, will, welcome its adoption as it minimises labour involved in cleaning, for instead of the troublesome and dirty blackleading imperative to the cleanliness of the old-fashioned grate a cursory dusting will restore it to its original brightness —brightness moreover which it will never lose owing to the rustless steel being solid. The booklet illustrates a score of these handsome fireplaces, one of which we reproduce, which can be supplied to specification, but the Company are in a position to submit many other designs in this new material, to harmonise with any style of furnishing. Those interested in this new development of firegrate should call at the showrooms at 50, Berners-street, London, W.1.

Thermostoves.

We have received a booklet from Messrs. Hartley & Sugden, Ltd., dealing with their patent Thermostoves, of which they have just produced a "Cottage" model. Statistics prepared prove that only 15 per cent. of the heat engendered by a kitchen range is used, *i.e.*, that it has an efficiency of 15 per cent. The Thermostove, it is claimed, has an efficiency of nearly 75 per cent., a big increase on the old method of heating. This means, therefore, a big decrease in the amount of fuel required; and it is claimed that the initial outlay is soon regained by the cut in running expenses. Besides the question of expense, the advantages this stove possesses should be taken into consideration. It ensures a continuous and abundant supply of hot water day and night; cooks, bakes or roasts any food, and boils pans, all from one fire which burns coke, anthracite or any solid fuel, while Models 1, 2 and 5 will, in addition, heat three small radiators and a towel rail. Nos. 5 and 6 have patent sliding oven doors fitted with non-heating handles, and a patent lifting firegrate which enables the whole fire to be lifted nearer the oven and hot plates if desired. The new "Cottage" model is smaller and more compact, and claimed to solve the problem of economy in space, fuel and labour in the small house. Those interested should call at the company's showrooms at 215, Tottenham Court-road, W.1.

Domestic Hot-Water Supply.

The illustration on page 467 shows the hot-water supply for a house at Cholesbury, for Colonel C. D. Field, designed by Messrs. T. P. Bennett & Son, architects. The scheme included the installation of a boiler to supply heating to the whole of the house by means of radiators, raising the temperature of the rooms on the ground floor to 60 deg. F., and on the first floor to 55 deg. F., when the outside temperature is 32 deg. F. The radiators are heated on a low-pressure hot-water circulator, and are each provided with two nickel-plated gun-metal shut-off valves, so that each radiator can be completely disconnected from the

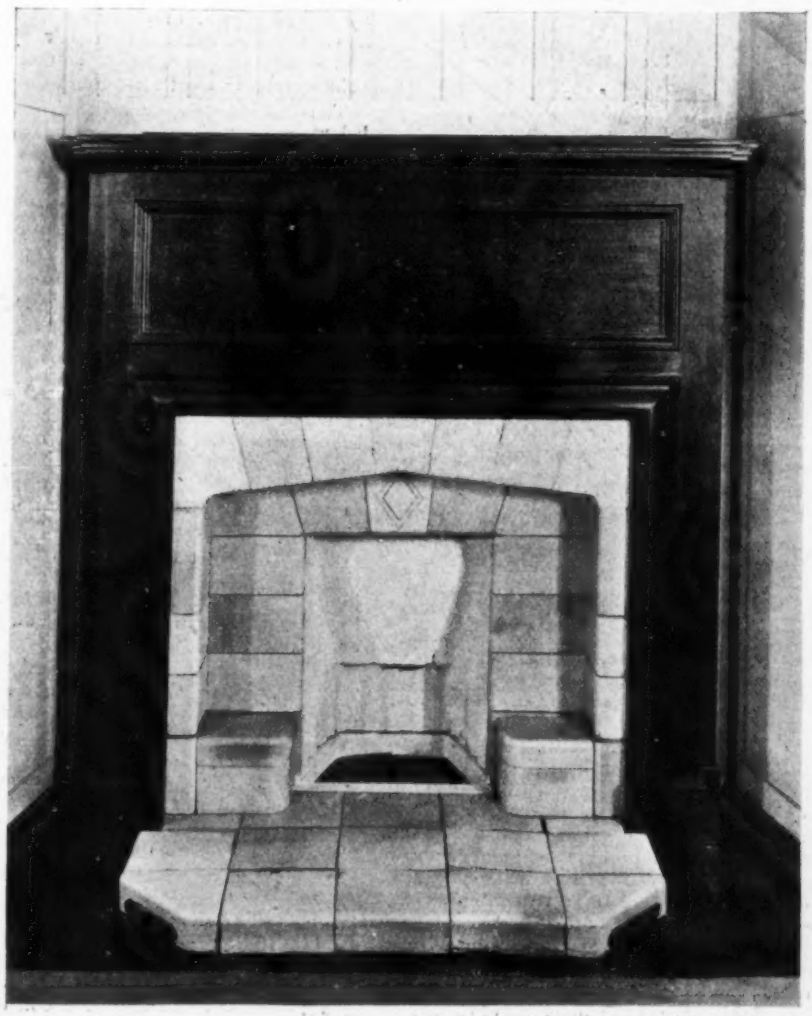


A Carron Fireplace Suite.

circulator without destroying the heat to the other units. The hot-water supply is obtained from a "Duplus" copper callorifier filled with a copper coil. There are eight radiators in the completed installation of "Classic" design, while hot-water is supplied in seven points in various parts of the house. The cost of the system was £125. A water supply was unobtainable on this site, and rainwater storage tanks were laid down, water being pumped into a water storage tank above the linen cupboard to supply the heating system.

Well Fires.

We have received two very artistic brochures from the Well Fire and Foundry Co., Ltd., of 15, Berners-street, W.1, illustrating the patent fireplaces which they are now producing in a glazed ceramic material and a wide range of delightful colourings. The Well Fire is composed of a well and back brick, both made of the finest selected Stourbridge fireclay, which possesses a high radiating efficiency. The "Well" bottombrick is constructed with ventilating air-channels controlled by means of ventilators. Air is conducted through these channels, which, being immediately beneath the fire, are usually of the same temperature as the fire; consequently the air, in its passage through these channels, is raised to that of the fire itself; the result is that the superheated air, uniting with the smoke, causes it to burst into flame, thus consuming smoke which would otherwise be lost in the chimney. (This explains why the Fire has cured a large number of smoky chimneys.) The accompanying illustration shows one of the firm's latest designs. The proof of the thoroughness of the fire's consumption lies in the fact that only a handful of fine ashes is left after a day's burning—nor need the fire be attended to after it is lit.



The "Well" Fire.

ARCHITECTS' & BUILDERS' INQUIRY BUREAU

We are glad to give questions and answers, but cannot accept responsibility for contributed replies, especially on legal matters.

May we appeal to our correspondents to submit their queries on paper of a size easily filed, and written as legibly as possible, or, better still, in typewriting?—ED.

Penalty Clause in Contract.

[REPLY TO W. L. CARTER, SEPTEMBER 18.]

SIR,—It should always be borne in mind that the sum appearing in the clause stated is not by way of being a penalty, but the agreed and ascertained amount of damages which the employer shall be held to suffer by the delay in completing the work, and as such must be commensurable with the probable or actual loss; the operation does not depend upon the granting of a bonus for early completion. On the other hand, I am of the personal opinion that a properly drawn clause securing a bonus to the builder in the circumstances named should be more efficacious, provided the employer is covered against the inducement which this naturally gives to the builder to rush the work. I know of no case where the legality of the clause in question has been successfully challenged.

S. R. M.

SIR,—A contract is an agreement enforceable at law between two definite parties directly creating an obligation. If the contract provides for bonuses to be paid to the contractor for earlier or punctual completion, coupled with the penalties or liquidated damages for delay, the contractor, in order to claim such bonuses, must complete at the time they became due under the contract, or he must show hindrance on the part of the employer or the architect. In Leslie & Co. *v.* Metropolitan Asylums Board (1901), 68 J.P. 86, it was held where sub-contractors had contracted direct with the employers and had caused delay to the general contractors for the whole work, that the latter were nevertheless entitled to the bonus for punctual completion.

The fact that no provision has been made for a bonus should the contractor finish before the time agreed upon, does not affect his liability for delay in completion, provided the essential elements of a contract are present in the agreement. In this case, the R.I.B.A. form of contract was used, and Clause 24 (which is, of course, subject to other clauses of the contract), is clearly enforceable if there has been nothing on the employer's part to cause the contractor delay.

In general, it may be taken that any party who undertakes expressly or impliedly to do something for a consideration, and does not do it, is liable for any damages which may accrue to the other party to the contract by reason of his neglect or dilatoriness; and this, even if performance of his contract is rendered impracticable by unforeseen circumstances, against which he might have protected himself, by additional terms or conditions in his contract. Nevertheless, since our Courts are now Courts of Equity, relief against legal consequences, in spite of delay, is given on equitable terms. Therefore, to succeed against a contractor where time is not of the essence of the contract, the employer must be prepared to prove lack of skill and dilatoriness on the part of the contractor in completing the contract. For cases bearing on these points, see chapter VI, "Creswell on Building Contracts." "LEGAL."

Obstruction of Light to a Window.

[REPLY TO "MONTAGUE," SEPTEMBER 11.]

SIR,—I should advise "A" to approach "B" with an offer to enter into an agreement under which, in return for a nominal yearly payment, his window may remain unobstructed until the agreement be terminated at will by either party. "A" is then protected, even after removal of the hoarding; and "B's" window cannot become an ancient light while its light is so "rented." The two are neighbours, and a little neighbourly accommodation, under full protection, is all that is needed.

"LIVE AND LET LIVE."

Partnership.

[REPLY TO "ZENITH," SEPTEMBER 11.]

SIR,—For a stable practice, offer one year's income based on the proportion to come to the intending purchaser from the average of the last three years' income of the practice. For instance, if the last three years' incomes of the practice have, say, been £1,300, £1,700 and £1,500 respectively, average £1,500, and if it is proposed to purchase a third share, a fair offer would be £500. In the case of a rising practice it might be worth offering anything up to two years' income according to the prospects. The great thing in these cases is to make thorough investigation as to whether the practice may be considered stable, rising or waning, and the certificate book is not always a good barometer. "BITTEN."

Porcelain-enamelled Taps.

SIR—A client has asked me to specify porcelain-enamelled taps to bath and scullery sinks and though I have been told frequently that they are very liable to be damaged by chipping I have never been able to meet anyone who has direct first-hand information upon the subject. I should be obliged if any of your readers would favour me with their experiences.

"CAUTION."

Preservation of Bath Stone.

[REPLY TO "VOX," SEPTEMBER 18.]

SIR,—Apply two coats of a colourless petrifying liquid. Allow a few days to pass between each application. This will preserve the appearance and durability of the stone.

JOHN M. FIFE.

THE BUILDING TRADE.

SETTING OUT A STAIRCASE.—IV.

(Concluded from page 436, September 18.

A *Ramp* is the name given to the concave curve in a handrail necessary to raise its height more rapidly than would be achieved by following its general line of rise, as when it comes against and forms part of a newel cap on a staircase landing in which situation a

RAMP.

handrail is run at a higher level than on a stair. For ornamental purposes handrails are sometimes ramped so as to enter the newel post at a level equal to that of the handrail across a level landing. They are likewise ramped at the bottom of the length to enter the bottom newel on the level.

A *Knee* is the reverse of a ramp, being a convex curve in a handrail.

When a knee follows upon a ramp the resultant curve is termed a *Swan's neck*.

A *Scroll Wreath* is the term given to a termination of a handrail in a spiral supported by one or by several clustered balusters. It is struck from a variety of centres, and is frequently found over the curtail step of a geometrical stair. A vertical scroll at the end of a handrail is known as a *Monkey-Tail*.

Square Cut is the term used in description of the modern method of forming a handrail wreath as in distinction from the older method known as the *Bevel Cut System*. In the first, the wreath is cut square from the surface, whilst in the *bevel cut system* the edges of the wreath are cut to a bevel.

The *Tangent System* is a geometrical method of obtaining the true section of a cylinder or other symmetrical solid when cut by an inclined plane, as in a handrail wreath, by enclosing the solid with tangent planes, upon the surfaces of which the inclination of the plane is drawn.

The *springing* is the term applied to that portion of a handrail where a curve commences, and the term is also applied to a similar portion of a string.

A *Core* is the name given to a thin bar sunk and screwed into the underside of a slender handrail to stiffen it.

Balusters, the intermediate supports to a handrail between the newels, are tenoned into the capping of the outer string at their lower end, and housed into a groove in the underside of the handrail at their tops.

The *Pitch of a stairs* is the term signifying the angle with the horizontal of the line drawn tangentially to the nosings of the treads.

Timbering is the name given to the underframing of rough supports of a stair.

A *Pitching Piece* is the name given to a piece of quartering fixed between the wall and newel on the underside of winders, and into which the carriages are framed.

A *Trimmer* is the joint carrying intermediate joists, forming a landing or carrying the ends of the joists cut to form the staircase well.

A *Fascia* is the vertical wrought board affixed to a trimmer round a staircase well.

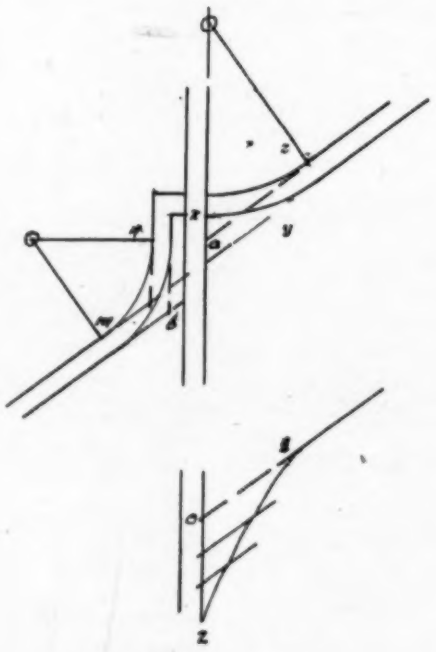
How to Lay Out Easements.

Where, owing to there being landings and newels on stairs, the line of the handrail, if continued, would cut the newel at different levels, curves, known as goose-necks, and easements are introduced to effect the entrance of the handrail to the newel at the same horizontal height.

The diagram below shows how to lay these out. The line of the handrail of the top flight would, if continued, strike the newel at *a*, and the rail of the handrail of the lower flight at *b*.

To describe the curve of the upper section, take a point *x* at any distance desired above the intersection of the handrail line and the newel and draw a horizontal line *xy*, calling the point where it cuts the lower line of the handrail *y*. From *y* as centre with radius *yx* describe an arc, calling the point at which it cuts the upper line of the handrail *z*. Next produce the line of the face of the newel, cut by the handrail line, and from *z* draw a line at right angles to the line of the handrail until it cuts the vertical line of the newel produced, calling the point of insection *o*. Then from *o* as centre, and *oz* as radius, describe an arc, which gives the top of the handrail as desired. A parallel curve of the same width will give the bottom line of the curved handrail.

Next from a point horizontal to the points at which the new curve strikes the newel, draw horizontal lines the top one of which has a length



of from 5 in. to 6 in., according to the depth of the handrail, so as to leave a clearance between the underside of the handrail and the newel post. This forms the portion known as the knee. From the ends of these, drop vertical lines to cut the line of the handrail at *c* and *b*. With centre *c* and radius of any convenient length, calling the point *n*, describe an arc *cnm*, calling the point where it cuts the line of the handrail *m*. From *m* draw a horizontal line, and from *m* draw a line at right angles to the line of the handrail, calling the point where these two intersect *M*. Then with centre O and radius *on*, describe the arc joining *nm*. This will give the line of the curve of the upper side of the handrail. Extend the radius to the depth of the handrail to obtain the line of the curve of the underside of the handrail.

The newel post may be finished with the cap detail which has been decided upon at a height suitable to give satisfactory proportions.

Together with this form of handrail usually goes a curved outer string as follows. The lines of the bottoms of the two strings, if produced, would cut the newel at different heights, which would look unsightly; consequently, an easement is effected as follows. With centre O being the point at which the line of the upper string would cut the newel if produced and radius O, describe an arc, calling the point at which it cuts the newel 2. Divide these two distances O1 and O2 into equal divisions. Intercross lines from one to the other and their points of intersection will give the curve of the easement.

Handrailing.

Handrails are of various types and designs in section, from mop-stick to heavily moulded composite members.

They may be bracketed out on w.i. brackets 3 ft. apart, with fanged ends built into the wall, as in an enclosed staircase, or supported on balusters rising from the outer string, or as on landings, from a capping mould run along the floor boards.

The handrail should be fixed vertically from the nosing of the tread at a height convenient for grasping with the hand. The height of the upper surface of the handrail from the tread should be from 2 ft. 7½ in. to 2 ft. 8 in., and to this there should be added at the landings the height of half a riser; the theory being that in ascending a person is in a less erect attitude than when walking along the level. However, in actual practice, a height of 2 ft. 6 in. from the nosing and of from 3 ft. to 3 ft. 3 in. will be found to give greater satisfaction.

The handrail may be fixed to the balusters by means of w.i. brackets screwed on, or by a continuous wrought-iron bar, ¼ in. thick, and as wide as the top of the balusters, the strip being screwed to both handrail and balusters.

The more customary method is that shown below, where it is grooved on its underside to receive the balusters which rise from the outer

string into which they are housed or morticed and tenoned. The groove on the underside of the handrail is continuous, in order that the balusters may be slid into position, when the handrail is fixed, and the groove may be filled in between the balusters if desired when the balusters are in position.

Handrails should, if possible, be run in continuous lengths where straight, but when jointed may either be butted and fastened together with a w.i. plate screwed on underneath or dowelled and splay-cut.

Balusters are of varying designs, but all the principles are the same in that there should be no space greater than 4 in. between them, and also that the face of a riser should line with the lower edge of a baluster, the intermediate span being filled with one or more balusters according to design. Where balusters rise from a cut-and-mitred string, the ends of the risers are mitred against the vertical string or cut bracket, if a bracket is fixed, and the tread is morticed to receive their feet. The outer edge of the nosing is also mitred to receive a moulding planted on over the feet of the balusters and the cut bracket.

The method of fixing the handrail to the newel consists of a shoulder cut in the handrail pinned through the newel with oak pins.

TOWN PLANNING INSTITUTE

The seventh annual Country Meeting of the Town Planning Institute will be held at Canterbury; and by invitation of the Mayor and Corporation and of the Dean, meetings will be held at the Guildhall and the Chapter House. The programme is as follows:—

FRIDAY, OCTOBER 2.

11.30 a.m.—Meeting at Guildhall. Welcome by His Worship the Mayor, Alderman George Pope. Reply by the President, Professor P. Abercrombie, M.A. Mr. P. H. Warwick, M.Inst.M. and Cy.E. (A.M.), City Engineer, will give an address entitled "Canterbury—Some Town Planning Problems."

3 p.m.—Meeting at the Chapter House. "Regional Planning in East Kent." Professor P. Abercrombie, M.A., President. There will be a small exhibition at the Chapter House, of plans of the East Kent Region, arranged by Mr. John Archibald (A.M.) and Mr. P. H. Warwick (A.M.).

8 p.m.—Public meeting at the Chapter House. "A Progressive Programme for Towns and Country," by Mr. G. L. Pepler, F.S.I., Past-President.

SATURDAY, OCTOBER 3.

9 a.m.—The Dean has kindly consented to conduct delegates round the Cathedral.

10 a.m.—Tour of the East Kent Region, starting from Palace-street, near the Mint Yard, King's School, in single-deck omnibus. Cost, 6s. 6d. per head. Visits will be made to some of the proposed sites for new towns, to the Bettes-hanger Pit, to Richborough, Sandwich, &c. Lunch at Masonic Hall, Deal (3s. 9d.). At Dover, Colonel F. G. Hayward has arranged with the Harbour Board for delegates to be shown the harbour. There will be an interval for tea. Return to Canterbury about 6 p.m.

7.30 p.m.—Dinner at the County Hotel (8s. 6d.) (evening dress).

SUNDAY, OCTOBER 4.

In the morning Mr. P. H. Warwick will take a party to view one or two of the famous old buildings of the city.

3 p.m.—Special Service at the Cathedral, by invitation of the Dean.

Arrangements have now been made to take the County Hotel for the week-end. Bed and breakfast, 9s. 6d. each. It will be convenient if members, who have not already done so, will return to the Secretary, Mr. A. R. Potter, 11, Arundel-street, Strand, London, W.C.2, at once, their application forms for hotel accommodation.

Clerks of Works and Building Foremen's Association Visit.

ABOUT 120 members of the Birmingham and Bristol Branches of the Clerks of Works and Building Foremen's Association were recently the guests of the Leckhampton Quarries Co., Ltd., Cheltenham, Glos. The visitors were accompanied by Mr. C. H. Trevelyan (President of the National Federation), Mr. F. J. Knight (Secretary), Mr. E. T. Howell (President of the Birmingham Association), and Mr. W. H. Townsend (President of the Bristol Association). The party first visited the lime kilns, which are of considerable interest, the plant being a modern one with an output of 1,000 tons per week. The quarries, which are remarkable for the size and depth of faces, were next inspected, and after this a visit was paid to the yard of the Company, where a hydrating plant is in course of erection, together with a large masonry plant. The visitors were struck by the unusual beauty of the polished stone. After a meal had been taken, Mr. T. F. Coke (general manager of the Company) welcomed the two branches of the Association, mentioning especially the fact that they had the honour of having with them the National President as well as the two Branch Presidents.

RATES OF WAGES IN THE BUILDING TRADE

Every endeavour is made to ensure accuracy, but we cannot be responsible for errors.

&.	Masons.	Brick-layers.	C'p'ters, Joiners.	Plas-terers.	Slaters.	Plum-bers.	Painters.	Labourers.
Aberdare	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Accrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Altrincham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Ashton-under-Lyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Barnsley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Barrow-in-Furness	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Barry	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bath	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Bedford	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Birkenhead	1/9	1/9	1/8½	1/9	1/9	1/9	1/8½	1/4
Birmingham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bishop Auckland	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Blackburn	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Blackpool	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bolton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bournemouth	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Bradford	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Brentwood	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Bridgwater	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Brighton	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Bristol	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Burnley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Burton-on-Trent	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bury	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Cambridge	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Cardiff	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Chatham	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Chelmsford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Cheltenham	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Chester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Chesterfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Colchester	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Coventry	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Crewe	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Darlington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Derby	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Doncaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Dudley	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Durham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
E. Glam.(Mon. Vall.)	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Eastbourne	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Exeter	1/7	1/7	1/7	1/7	1/7	1/7	1/6	1/2½
Folkestone	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Gloucester	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/1½
Grantham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Grays	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/3½
Grimsby	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Great Yarmouth	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Guildford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Halifax	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Harrogate	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Hartlepools	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Hastings	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Hereford	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/1½
Huddersfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Hull	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Ipswich	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Lancaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Leamington Spa	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Leeds	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Leicester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Lichfield	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Lincoln	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Liverpool	1/9	1/9	1/8½	1/9	1/9	1/9	1/8½	1/4
Llanelly	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
London { 12 m. radius	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/8½	1/4½
London { 12-15 m. radius	1/9	1/9	1/9	1/9	1/9	1/9	1/8	1/4
Loughborough	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Luton	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Maidstone	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Manchester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Mansfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Merthyr Tydfil	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Middlesbrough	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Newcastle-on-Tyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Newport, Mon.	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Northampton	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Norwich	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Nottingham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Oakham	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Oldham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Oxford	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Plymouth	1/8	1/8	1/8	1/8	1/8	1/8	1/7	1/3½
Pontypridd	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Portsmouth	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Preston	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Reading	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Rochdale	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Rochester	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Rugby	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
St. Albans	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
St. Helens	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Scarborough	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/2½
Sheffield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Shrewsbury	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Southampton	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Southend-on-Sea	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Southport	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
South Shields	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Stockport	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Stockton-on-Tees	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Stoke-on-Trent	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Stroud	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5	1/1½
Sunderland	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Swansea	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Swindon	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/1½
Taunton	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Torquay	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Tunbridge Wells	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Wakefield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Walsall	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Warrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
West Bromwich	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Wigan	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Windsor	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Wolverhampton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Worcester	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
York	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½

(For rates of wages in the Building Trade in Scotland, see page 481.

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in; the name and address at the end is the person from whom or place where quantities, forms of tender, &c., may be obtained.

BUILDING, PAINTING, ELECTRIC LIGHTING, HEATING, etc.

SEPTEMBER 28.—**Carlisle.** — BUILDING. — Screening and pumping chambers at the new electricity power station, Willow Holme, for the T.C. Henry C. Marks, City Engineer and Surveyor. Deposit 10s.

SEPTEMBER 28.—**Durham.**—ADDITIONS, &c.—To Haverton Hill Council school, for the Durham C.C. Mr. F. Willey, F.R.I.B.A., architect, 34, Old Elvet, Durham.

SEPTEMBER 28.—**East Molesey.**—HOUSES.—Erection of 28 houses at Beauchamp-road, for the East and West Molesey U.D.C. Mr. Gordon Condell, Clerk, Council Offices, St. Mary's-road, East Molesey. Deposit £1 1s.

SEPTEMBER 28.—**Huddersfield.**—HOMES.—Four detached children's homes, at the Leas Scholes, for the B.G. J. Berry & Sons, architects and surveyors, 3, Market-place.

SEPTEMBER 28.—**Hull.**—ALTERATIONS.—Alterations and additions to the car shed, Holderness-road, for the T.C. City Architect. Deposit £2 2s.

SEPTEMBER 28.—**London, N.W.**—Development of new housing estate at Hendon, for the L.C.C. Administrator of Housing Development Schemes, Old County Hall, Spring-gardens, S.W.1. Deposit £10.

SEPTEMBER 28.—**London, W.4.**—SCHOOL.—Erection of a new brick and brick block Central School, to accommodate 640 scholars, at Staveley-road, Burlington-lane, Chiswick, for the U.D.C. Edward Willis, F.S.I., Inst.C.E., Town Hall, Chiswick. Deposit £3 3s.

SEPTEMBER 28.—**Rathdown.** — WALL. — Retaining wall at the North Beach-road, Greystones, for the Wicklow County Board of Health. R. M. Butler, F.R.I.B.A., 23, Kildare-street, Dublin.

SEPTEMBER 28.—**Rowley Regis.**—HOUSES.—For (*a*) 30 parlour-type houses and incidental works, including sewering, kerbing, coating with tarred macadam and forming footpath and roadway, in Mackmillan-road, on the Rowley Regis and Black Heath housing site; and (*b*) erecting 22 non-parlour-type houses and incidental works, including forming, making-up and kerbing an occupation road, coating same with tarred macadam and forming footpath, on the Dudley-road (Tippity Green) housing site, Rowley Regis, for the U.D.C. D. Wright, Clerk to the Council.

SEPTEMBER 28.—**Shipley.**—EXTENSIONS.—To the Sir Titus Salt's Hospital, for the Governors. H. Dawson, surveyor and architect, Somerset House.

✱SEPTEMBER 28.—**South Shields.**—HOUSES.—Erection of the whole or part of 356 houses (which include two types) on the Cleadon Park Estate, East Side, Sunderland-road, for the Corporation. S. G. Stanton, Borough Engineer, Town Hall, South Shields. Deposit £5 5s.

SEPTEMBER 28.—**Stoke-on-Trent.**—CONVERSION.—Conversion into water-closets of about 70 privies and pails, in Hanford, for the T.C. Chief Sanitary Inspector, St. Peter's Chambers, Glebe-street.

SEPTEMBER 29. — **Durham.** — SCHOOL. — General builders' work required in connection with the erection of Monkton new Council School, for the C.C. F. Willey, F.R.I.B.A., F.S.I., 34, Old Elvet, Durham.

SEPTEMBER 29.—**Greenock.**—HOUSES.—104 Houses at South Craigieknowes, for the T.C. A. Nimmo, Town Clerk.

SEPTEMBER 29.—**Huyton-with-Roby.**—FENCING, &c. —Taking down stone walling and rebuilding, building brickwalling, and erecting fencing in connection with road improvement works, Wood-lane, Huyton Quarry, for the U.D.C. H. Finister, P.A.S.I., Surveyor. Deposit £1 1s.

SEPTEMBER 29.—**Kilkenny.**—SCHOOL.—Erection and furnishing of St. Canice's National School, Kilkenny City, for the Commissioners of Public Works. Secretary, Dublin.

SEPTEMBER 29.—**Montrose.**—COTTAGES.—Cottages at H.M. Coastguard Station, for H.M. Office of Works. Architect, H.M. Office of Works, 122, George-street, Edinburgh. Deposit £1 1s.

SEPTEMBER 29.—**Newton-in-Makerfield.**—HOUSES.—Twenty-four non-parlour houses at the South Mesnes, Earlestown, for the U.D.C. J. Elston, A.R.I.B.A., Market Chambers, Earlestown.

SEPTEMBER 29.—**Oldmeldrum.**—HOUSES.—Three blocks of houses on Urquhart-road site, for the T.C. W. L. Duncan, architect, Turriff.

SEPTEMBER 30.—**Ashton-under-Lyne.** — HOUSES. — Forty-four houses in blocks of four in Pelham-street, for the T.C. J. Rowbottom, Borough Engineer and Surveyor. Deposit £2 2s.

SEPTEMBER 30.—**Boston.**—ADDITIONS.—Addition to the Grammar School, for the Holland E.C. Scorer & Gamble, architects, Bank-street Chambers, Lincoln. Deposit £2 2s.

SEPTEMBER 30.—**Glamorganshire.**—BUILDING.—For (1) new intermediate school for 340 boys, caretaker's house, boundary walls, cycle house, &c., at Neath; (2) new council school for 160 mixed and infant pupils at Laleston, near Bridgend; (3) retaining wall and levelling of playground at Clyne Council School; (4) new kitchen and extension of dining-rooms at Ystalyfera Intermediate School; and (5) improvements to playgrounds at Wern (Ystalyfera) Council School, for the E.C. T. Mansel Franklen, Secretary of E.C., Glamorgan County Hall, Cardiff.

SEPTEMBER 30. — **London.**—CONVENIENCES.—Construction of public conveniences at the south end of Philpot-street, Mile End, E. 1, for the Stepney B.C. B. J. Belsher, Borough Engineer and Surveyor. Deposit £2.

✱SEPTEMBER 30.—**Mansfield.**—HOUSES.—Erection and completion of 58 houses in pairs, and blocks of six and four, for the T.C. Waude Thompson, Assoc.M.Inst.C.E., Borough Engineer and Surveyor, Market-street, Mansfield. Deposit £2 2s.

SEPTEMBER 30.—**Nantwich.** — HOUSES. — Forty-six houses on the Wallfields housing site, for the U.D.C. P. H. Paton, surveyor. Deposit £2 2s.

SEPTEMBER 30.—**Penygarn.**—BUNGALOW.—At Penygarn, for Mr. T. Davies. J. Lewis-Evans, architect and surveyor, 21, Great Darkgate-street, Aberystwyth.

SEPTEMBER 30.—**Ruislip-Northwood.**—PAINTING.—At the Council Offices, Northwood, for the U.D.C. H. R. Metcalfe, Engineer and Surveyor.

SEPTEMBER 30.—**Stocksbridge.**— HOUSES.— Thirty houses on the Shay House estate, for the U.D.C. J. N. Singleton, Chartered Surveyor.

SEPTEMBER 30.—**Thornton.**—SCHOOL.—To accommodate 40 scholars at Thornton, near Pocklington, for the East Riding C.C. County Architect, County Hall, Beverley. Deposit £1 1s.

SEPTEMBER 30. — **Wandsworth, S.W.** — POST OFFICE.—Erection and completion of a branch post office at Wandsworth, S.W., for the Commissioners of H.M. Office of Works. Contracts Branch, King Charles street, London, S.W. 1. Deposit £1 1s. (cheques payable to the Commissioners).

SEPTEMBER.—**Malling.**—CONVERSION.—Of the house known as "Elverdale," the Freehold, East Peckham, into two cottages, for the R.D.C. C. Souter, Sanitary Surveyor, West Malling.

OCTOBER 1.—**Dublin.**—REBUILDING.—Taking down and rebuilding upper portion of the front wall of the premises, No. 2, Kildare-place, for the Commissioners of Public Works. J. J. Healy, Secretary, Office of Public Works, Baile Atha Cliath. Deposit £1.

OCTOBER 1.—**Frome.**—HOUSES.—Twenty-four houses at Vallis-road, for the U.D.C. P. B. Rigg, architect, Cork-street. Deposit £2 2s.

OCTOBER 1.—**Golcar.**—ROOM.—Masons', plumbers', carpenters' and joiners' work required in the erection of a club room in Scar-lane, Golcar, for the Golcar Branch of the British Legion. A. Shaw, architect, Golcar.

OCTOBER 1.—**Ireland (Free State).**—RESTORATIONS. —Of Cong. ex R.I.C. Barracks, co. Mayo; Ardrahan ex R.I.C. Barracks, Galway; Kilbrittain ex R.I.C. Barracks, co. Cork; Waterville ex R.I.C. Barracks, co. Kerry, for the Commissioners of Public Works. J. J. Healy, Secretary, Office of Public Works, Baile Atha Cliath (Dublin). Deposit £1 each.

OCTOBER 1.—**Kilkenny.**—PAINTING.—Certain painting works, and works incidental thereto, at Kilkenny Barracks, Kilkenny. Officer-in-Charge of Contracts, Portobello Barracks, Dublin. Deposit £1 1s.

OCTOBER 1.—**Litherland.**—HOUSES.—Erection of 50 houses on the housing site belonging to the U.D.C. of Litherland between Sefton-road and Moss-lane. G. Ponsford, Engineer and Surveyor, Council Offices, Litherland.

OCTOBER 1.—**London, S.W.**—DEMOLITION.—Taking down and clearing away temporary iron buildings complete with fittings, &c., at Tooting Home, Churchlane, Tooting, S.W., for the Guardians of the Wandsworth Union. F. J. Curtis, Clerk, Union Offices, St. John's Hill, S.W.18.

OCTOBER 2.—**Barnsley.**—EXTENSION.—Wards for women and children, connecting corridors, and sundry alterations to the Beckett Hospital, for the Committee. C. F. Moxon, architect, Regent-street South.

OCTOBER 2.—**Didcot.**—ADDITIONS AND ALTERATIONS.—Erection of six new classrooms, new offices, drainage, and other works at Didcot Council School, for the Berkshire E.C. W. C. F. Anderson, Education Secretary, Shire Hall, Reading. Deposit £2 2s.

OCTOBER 2.—**East Grinstead.**—ADDITIONS.—Alterations and additions to the sewage pumping station at Sunnyside, for the U.D.C. Dodd & Watson, engineers, County Chambers, Corporation-street, Birmingham. Deposit £2.

OCTOBER 3.—**Earsdon.**—HOUSES.—100 "A" type houses on the Park House estate, for the U.D.C. J. R. MacMillen, Surveyor, Council Offices, Shiremoor.

OCTOBER 3.—**Featherstone.**—PAINTING.—Outside painting of 75 houses, situate at Moor-road, Vicarage-lane and Farm-road, near Station-lane, for the U.D.C. S. Chesney, A.R.I.B.A.

OCTOBER 3.—**Hazelbury.**—REPAIRS.—Repairs and redecoration at Hazelbury Bryan Council School, for the Dorsetshire C.C. County Architect, County Offices, Dorchester.

OCTOBER 3.—**Wayland.**—HOUSES.—Two houses at Banham, near Dam Brigg, and two houses at Rockland All Saints, for the R.D.C. A. A. Gompertz, Clerk to the Council, Watton, Norfolk.

OCTOBER 5.—**Carterton.**—INSTITUTE.—Women's Institute at Carterton. Mrs. Clarke, Belmont, Carterton.

OCTOBER 5.—**Halifax.**—PAINTING.—Redecoration of the Victoria Hall, Town Hall, for the C.B. Borough Engineer, Crossley-street. Deposit £1 1s.

OCTOBER 5.—**Hindley.**—SCHOOL.—School off Leigh-road, Hindley Green, to accommodate 450 scholars, for the U.D.C. H. Wade, 2, Birley-street, Blackpool. Deposit £5 5s.

OCTOBER 5.—**Kent.**—SCHOOL.—Extension of the Cranbrook Grammar School for Boys, in the County of Kent, for the E.C. County Education Architect, Room 69, Sessions House, Maidstone, between the hours of 10 a.m. and 4 p.m. (Saturdays and Sundays excepted). Deposit £2 2s.

OCTOBER 5.—**Loxley.**—PLUMBING.—Fitting up of the proposed special subjects centre at the Loxley Council School, for the West Riding E.C. W. Wood, Divisional Clerk, Education Offices, Penistone.

OCTOBER 5.—**Newmarket.**—HOUSES.—Erection of 12 brick and slated parlour houses, in six pairs, at Laureate Paddocks site, for the Newmarket U.D.C. W. H. Eley, Surveyor, Godolphin House, Newmarket.

OCTOBER 5.—**Ripon.**—HOUSES.—Twenty-six houses, for the T.C. City Engineer. Deposit £5.

OCTOBER 6.—**Kew Gardens.**—POST OFFICE.—Erection of a branch Post Office at Kew Gardens, for the Commissioners of His Majesty's Office of Works. Contracts Branch, King Charles-street, London, S.W.1. Deposit £1 1s. (cheques payable to the Commissioners).

OCTOBER 7.—**East Stow.**—HOUSES.—For sixteen houses at Combs and fourteen houses at Stowupland, for the R.D.C. Hunt & Coates, architects, 51A, Abbeygate-street, Bury St. Edmund's.

OCTOBER 7.—**Chichester.** — HOUSES. — Erection of 44 non-parlour houses (in pairs) in Lewis-road (off Adelaide-road), for the Corporation. Whitehead & Whitehead, architects, 18, South-street, Chichester. Deposit £1 1s.

✱OCTOBER 7.—**Gravesend, Kent.**—FLATS.—Erection of 48 flats in twelve blocks of four flats each on the King's Farm estate, for the Corporation. Thomas H. Dunch, architect, 27, Clement's-lane, London, E.C.4, or the Clerk, 4, Woodville-terrace, Gravesend, Kent. Deposit £2 2s.

OCTOBER 7.—**London, N.W. 8.**—STAFF ACCOMMODATION.—New staff accommodation at the North-Western Fever Hospital, Lawn-road, Hampstead, N.W. 8, for the Metropolitan Asylums Board. Office of the Board, Victoria-embankment, London, E.C. 4. Deposit £1 in respect of each work.

OCTOBER 7.—**London, S.W. 18.**—TOWN HALL.—Erection of a new town hall and alterations to the existing town hall, at High-street, Wandsworth. The buildings will be partly constructed of reinforced concrete. For the Wandsworth B.C. Ernest J. Elford, M.Inst.C.E., Borough Engineer, 215, Balham High-road, S.W. 17. Deposit, £2 2s.

OCTOBER 7.—**Rochdale.**—CONVENIENCE.—Gentlemen's convenience at Wet Rake Gardens, for the C.B. Borough Surveyor.

OCTOBER 7.—**Sutton (Surrey).**—CLEANING, PAINTING AND REPAIR WORK.—At Belmont laboratories and stables, at Sutton (Surrey), for the Metropolitan Asylums Board. Office of the Board, Victoria-embankment, E.C. 4. Deposit £1 in respect of each work.

OCTOBER 7.—**Various Places.**—VARIOUS WORKS. —Alterations, additions, tiling, chimney stacks, building accommodation, coal store (these various works to hospitals, homes, and wards), for the Metropolitan Asylums Board. Office of the Board, Victoria-embankment, E.C. 4. Deposit £1 in respect of each work.

✱OCTOBER 8.—**Earlsfield.**—HALL.—Erection of a new concert hall, &c., at the Deerhurst Club and Institute premises, 2–4, Steerforth-street, Earlsfield, S.W.18.

✱OCTOBER 8.—**Middlesex.**—HOUSES.—Erection and completion of houses on the Priory-road site, for the Hampton U.D.C. Sidney H. Chambers, Surveyor, Public Offices, Hampton, Middlesex.

OCTOBER 9.—**Leeds.**—HEATING.—Installation of a low-pressure hot-water heating apparatus in the Female Infirm Block of the Bramley Institution, for the B.G. James H. Ford, Clerk to the Guardians, Poor Law Offices, South Parade, Leeds.

OCTOBER 10.—**Liskeard.**—HOUSES.—Fourteen houses in five blocks, for the T.C. H. R. Venning, Lic.R.I.B.A., Architect, Midland Bank Chambers.

✱OCTOBER 10.—**Nottingham.**—HOUSES.—Erection of 24 and 40 non-parlour houses in blocks of two, four and six, on the Hallcroft housing estate, Retford, for the East Retford Corporation. Robt. E. Wilson, Borough Engineer and Surveyor, Market-place, Retford, Notts. Deposit £1 1s.

OCTOBER 12 — **East Molesey.** — HOUSES.—Erection of 29 houses at Spreighton-road, West Molesey, for the East and West Molesey U.D.C. Council Offices, St. Mary's-road, East Molesey. Deposit £1 1s.

OCTOBER 12. — **Middlesex.** — STORES' DEPOT, STABLING, &c.—Erection of Stores' Depot, stabling, &c., at Northwood, for the U.D.C. H. R. Metcalfe, A.M.Inst.C.E., Council Offices, Northwood, Middlesex. Deposit £2 2s.

OCTOBER 12.—**Reading.**—CONVENIENCES.—Public sanitary convenience on the Fairground, Great Knollys-street, for the C.B. Borough Surveyor.

OCTOBER 13.—**Liverpool.**—ALTERATIONS.—To Prescot Pumping Station, for the Corporation. Water Engineer, Alexandra-buildings, 55, Dale-street. Deposit £1 1s.

OCTOBER 13. — **London, E.C.2.** — SUBWAY.—Construction of a subway 12 ft. in diameter and about 780 ft. in length on the east side of St. Martin's-le-Grand and the south side of Gresham-street, in the City of London, for the Corporation. City Engineer's Office, Guildhall, E.C.2. between the hours of 10 a.m. to 1 p.m., and 2 p.m. to 5 p.m. Deposit £2 2s.

✱OCTOBER 13.—**London, S.E.18.**—ALTERATIONS AND ADDITIONS.—Alterations and additions at the Woolwich Arsenal and Town Social Club. The Secretary, on personal application between the hours of 11 a.m. and 2.30 p.m., Mount Pleasant, Plumstead, S.E.18.

OCTOBER 13.—**West Riding.**—BUILDING.—For (1) additional cloakroom accommodation at Ousefleet Council School; (2) installation of a low-pressure heating apparatus at Grindleton-lane Ends Council school, and (3) erection of a new school at Askern Sutton-road, for the C.C. Education Department, County Hall, Wakefield.

OCTOBER 14.—**Llanelly.**—REMODELLING LIBRARY.—Remodelling of the existing library and such portions of the Llanelly Athenæum and Llanelly Nevill Memorial as are involved in accordance with 1909 R.I.B.A. Conditions of Contract, &c., for the Borough Council. H. A. Gold, M.C., A.R.I.B.A., 14, Bedford-row, London, W.C.1. Deposit £3 3s.

✱OCTOBER 14.—**London, S.W.6.**—FLATS.—Erection of three blocks of flats comprising 36 dwellings in Wyfold-road, Fulham, for the Fulham B.C. A. F. Holden, Borough Engineer, Town Hall, Fulham. Deposit £2 2s.

OCTOBER 14.—**Port Talbot.**—PAINTING.—Painting the exterior of the following schools: (*a*) Eastern Infants' School, Taibach, Port Talbot; (*b*) Cwmavon Schools, for the T.C. Moses Thomas, Education Officer, Aberavon.

OCTOBER 15.—**Bristol.**—FLATS.—Erection of a block of flats at Eugene-street, St. James, Bristol, for the Housing Committee of the City Council. Housing Dept., 51, Prince-street. Deposit £1.

✱OCTOBER 15.—**Gloucester.**—POLICE STATION.—Erection of a police station at Pucklechurch, near Bristol, for the Standing Joint Committee of the Gloucestershire County Council. E. S. Sinnott, County Surveyor, Shire Hall, Gloucester. Deposit £2 2s.

OCTOBER 15.—**Waltham.**—SCHOOL.—School at Peaks-lane, Waltham, near Grimsby, for the Holland E.C. Scorer & Gamble, architects, Bank-street Chambers, Lincoln. Deposit £2 2s.

OCTOBER 17.—**Barnet.**—HOUSES.—Erection and drainage, &c., of 181 houses (126 parlour and 55 non-parlour), on the Wellhouse estate, for the U.D.C. Surveyor, Council Offices, Wood-street, Barnet, Herts. Deposit £3 3s.

OCTOBER 20.—**Thurcroft.**—EXTENSIONS.—To the Council school, for the West Riding E.C. The Education Department, County Hall, Wakefield.

OCTOBER 21.—**York.**—ADDITIONS.—Alterations and additions to the existing engine house and offices at the electricity generating station, for the T.C. F. W. Spurr, City Engineer. Deposit £2 2s.

OCTOBER 27.—**Ilford.**—LIBRARY BUILDING, &C.—Erection and completion of library building, together with Town Hall basement under, and extension of Town Hall offices over, at Oakfield-road, for the U.D.C. H. Shaw, M.Inst.C.E., Engineer and Surveyor, Town Hall, Ilford. Deposit £5 5s.

✱OCTOBER 28.—**London, E.8.**—BUILDING WORKS.—Building works, being the erection and completion of two electricity sub-stations, one at Gainsborough-road, Hackney, and one at Holly-street, Hackney, for the Hackney Metropolitan B.C. Borough Electrical Engineer, 306, Mare-street, Hackney, E.8. Deposit £2 2s.

✱NO DATE.—**Bucks.**—SCHOOL.—Erection of a new Council School to accommodate 280 children at Southcourt, Aylesbury, for the County E.C. County Architect, Education Sub-Office, Aylesbury. Deposit £1 15s.

MATERIALS, etc.

SEPTEMBER 28.—**Tynemouth.**—MATERIALS.—Northumberland whinstone, slag, crushed granite, cast-iron work, cement, iron pipes and fittings, iron and steel, for the C.B. J. F. Smillie, Borough Surveyor.

SEPTEMBER 30.—**Gellygaer.**—MATERIALS.—Paving, kerb and channel concrete fence posts, drain pipes, cement and lime, cast-iron goods, smithwork, ironmongery, for the U.D.C. F. Read, surveyor.

SEPTEMBER 30.—**London.**—MATERIALS.—For (*a*) castings and other ironwork; (*b*) stoneware pipes, gullies, and Portland cement; (*c*) 650 tons of granite or slag tarmacadam, for the Islington B.C. Borough Engineer.

OCTOBER 1.—**Belfast.**—PIPES.—1,000 3 in. cast iron pipes; 4,000 4 in. cast iron pipes; 1,000 6 in. cast iron pipes; 20 tons tinned compo gas pipe, and 20 tons virgin pig lead, for the C.B. Engineer and Manager.

OCTOBER 2.—**Durban.**—PIPES.—Cast-iron pipes and specials, for the T.C. Department of Overseas Trade, 35, Old Queen-street, S.W.1.

OCTOBER 2.—**Durban.**—VALVES.—Six reflux valves and 363 sluice valves, for the T.C. Department of Overseas Trade, 35, Old Queen-street, S.W.1.

OCTOBER 5.—**Belfast.**—PIPES.—320 tons of 18 in., 15 in., 12 in., and 9 in. cast iron pipes, together with specials, tapers, &c., for the C.B. City Surveyor. Deposit £2 2s.

OCTOBER 14.—**Edmonton.**—FENCING.—1,000 yds. of wrought iron fencing and gates, for the U.D.C. Mr. C. Brown, engineer and surveyor.

OCTOBER 16.—**Lydenburg (South Africa).**—PIPES.—Steel pipes, specials, valves, &c., for the T.C. Department of Overseas Trade, 35, Old Queen-street, London, S.W.1.

NO DATE.—**Newton Abbot.**—PIPES.—Ten tons of 6 in. and about 10 tons of 9 in. new or second-hand cast iron pipes, for the R.D.C. S. Olver, Highway Surveyor, 9, Marlborough-terrace, Bovey Tracey.

ENGINEERING, IRON AND STEEL.

SEPTEMBER 30.—**Guiseley.**—RECONSTRUCTION.—Reconstruction and extension of the existing settling tanks, filters, for the U.D.C. H. A. Johnson, engineer, 14, The Exchange, Bradford. Deposit £2 2s.

OCTOBER 1.—**London.**—STEELWORK.—Structural steelwork for wagon shop, Perambur, for the Madras and Southern Mahratta Railway Co. Directors, 25, Buckingham Palace-road, S.W.1. Charge £1 1s.

OCTOBER 1.—**Glasgow.**—BRIDGE.—Reinforced concrete bridge over Jenny's Burn in Richmond Park, for the T.C. J. Lindsay, Town Clerk.

OCTOBER 2.—**Liverpool.**—STEELWORK.—For the new tram works, Edge-lane, for the T.C. Land Steward and Surveyor, Municipal Buildings. Deposit £5 5s.

OCTOBER 3.—**North Walsham.**—TANKS.—Provision and laying of sewers, the construction of tanks and filter at the Outfall, &c., for the U.D.C. A. E. Collins, engineer, 10, Cambridge-road, Colchester. Deposit £10.

OCTOBER 3.—**Sibsey.**—BRIDGE.—Reinforced concrete bridge and contingent works, over the Hobhole Drain, for the Holland C.C. Wm. A. Rogerson, County Surveyor, Sessions House, Boston, Lincs. Deposit £2 2s.

OCTOBER 10.—**Bolton-le-Sands.**—BRIDGES.—Roadworks and two bridges (reinforced concrete bridge over Lancaster and Kendal Canal and masonry bridge over an occupation road) in connection with the construction of the new road, for the Lancashire C.C. W. H. Schofield, County Surveyor, County Offices, Preston.

OCTOBER 10.—**Gunthorpe.**—BRIDGE.—Ferro-concrete bridge over the River Trent, for the Notts C.C. J. Cracroft Haller, County Surveyor, Shire Hall, Nottingham. Deposit £5.

OCTOBER 10.—**Notts.**—EXTENSIONS.—Extension of bridge at Thurgarton, and extension and strengthening of bridge at Gamston, for the C.C. J. Cracroft Haller, County Surveyor, Shire Hall, Nottingham. Deposit £3 3s.

OCTOBER 15.—**Cape Province.**—STEELWORK.—Structural steelwork for Palmiet River Bridge, Cape Province, for the South African Railways Committee. Department of Overseas Trade, 35, Old Queen-street, London, S.W.1.

ROAD, SEWERAGE, AND WATER WORKS.

SEPTEMBER 28.—**Basford.**—ASPHALTING.—Asphalting and retopping paths and yard pavings, and also for external painting to 88 Council houses situate as follows: 30 houses, Colwick-vale, Colwick; 24 houses, Westdale-lane, Priory-road, and Vernon-avenue, Gedling; 22 houses, Baker-lane and Stamford-street, Newthorpe, Greasley; 12 houses, Church-lane and Broad-lane, Brinsley, for the R.D.C. S. Maylan, engineer and surveyor.

SEPTEMBER 28.—**Birmingham.**—SEWERS.—Construction of roads and sewers on the Norton Training School estate, Bordesley Green, for the T.C. H. H. Humphries, City Engineer and Surveyor. Deposit £2.

SEPTEMBER 28.—**Romford.**—SEWER.—Construction of about 900 yards of 9 in. stoneware pipe surface water sewer, with 10 manholes, 29 gullies, and other incidental works, in Wingletye-lane, Hornchurch, for the R.D.C. W. J. Grant, Surveyor, 16A, South-street.

SEPTEMBER 28.—**Rugby.**—RESERVOIR.—Construction of impounding reservoir; 15 in. cast-iron main, with sluice valves, air valves, and washouts, about 7 miles in length; cottage, a recorder station, a chlorinating house, and tank, and alterations and additions to mains at the Council's Avon Water Works, for the U.D.C. G. Bertram Kershaw, Consulting Engineer, 9, Victoria-street, Westminster, S.W.1. Deposit £5.

SEPTEMBER 28.—**Rutland.**—PAVING.—Supplying and laying asphalte paving, approximately 105,000 sq. yds. in extent, in the Great North-road, commencing at the Stamford Borough Boundary and terminating at the Rutland and Kesteven County Boundary, for the C.C. Clerk, 7, Catmos-street, Oakham. Deposit £5.

SEPTEMBER 28.—**Salford.**—RAILINGS.—Supply and fixing of iron railings at the Nurses' Home, Stott-lane, Pendleton, for the B.G. E. H. Inchley, Clerk, Poor Law Offices, Eccles New-road.

SEPTEMBER 28.—**Saltash.**—REPAVING.—Of the footpath in Fore-street and Callington-road, for the T.C. Borough Surveyor.

SEPTEMBER 28.—**South Stoneham.**—SEWERAGE.—Construction of main severage and sewage disposal works in the village of Netley, for the R.D.C. W. J. Green, engineer, 39A, Portsmouth-road, Woolston, Southampton. Deposit £3 3s.

SEPTEMBER 29.—**West Hartlepool.**—ROAD.—Challoner-road, Jesmond-gardens, Elmwood-grove, Rychill-gardens, Potterdale-street, and back Wensleydale- and Patterdale-street; also for the construction of footpaths in Wharton-terrace and South-drive, for the C.B. Francis Durkin, A.M.I.C.E., Borough Engineer.

SEPTEMBER 30.—**Wood Green.**—IMPROVEMENTS.—In Douglas-road, River Park-road and Alexandra-terrace, for the U.D.C. Engineer and Surveyor. Deposit £1 1s.

SEPTEMBER.—**Epsom.**—WIDENING.—Of Sutton-lane, Banstead, for the R.D.C. T. E. Ware, surveyor, Waterloo-road, Epsom.

OCTOBER 1.—**Chippenham.**—MAINS.—Water mains, about 2,355 yds. of 4 in. main from the high level reservoir to Sheldon-road corner; about 823 yds. of 4 in. main along Marshfield-road; about 229 yds. of 3 in. main along Sheldon-road, for the U.D.C. A. E. Adams, Borough Engineer, High-street. Deposit £2 2s.

OCTOBER 1.—**East Riding.**—ROAD.—Reconstruction of approximately 1,760 lineal yards of the Elloughton-road, near Brough, and also for the reconstruction of approximately 3,217 lineal yards of the road from Walkington to Bishop Burton, via School-lane and Pot and Ladle Pit, for the Beverley R.D.C. E. Picker, Surveyor, 12, Newbegin.

OCTOBER 1.—**Glamorganshire.**—ROAD.—Construction of a new road approximately 5½ miles in length, commencing at a point near Fernhill Colliery, Treherbert, and terminating at its junction with the Neath and Aberdare main road below Rhigos, for the C.C. T. Mansel Franklen, Clerk of the County Council, Glamorgan County Hall, Cardiff.

OCTOBER 1.—**Honiton.**—SEWER.—Construction of about 480 yards of 7 in. and 9 in. stoneware pipe sewer, mostly 9 in., together with manholes and all appurtenant works, at Honiton, for the T.C. W. H. Radford & Son, engineers, Albion Chambers, King-street, Nottingham. Deposit £2 2s.

OCTOBER 2.—**East Kerrier.**—SEWERS.—Sewers and sewage dispersal works for the Parish of Budock, for the R.D.C. R. Hansford Worth, engineer, 42, George-street, Plymouth.

OCTOBER 2.—**Gloucestershire.**—ROADS.—Works on the London–South Wales Trunk road:—5, Carrying out the following works on the main road A.40, between Gloucester and Cheltenham—approximate distance four and a quarter miles—(*a*) making-up and improvements of existing paths; (*b*) improvement of road junctions with the main road. Carrying out the following works on the main road A.40 in the Charlton Kings Urban area from Hearne-road to the boundary of the Urban area—approximate distance 2,143 yards—(*a*) making-up and improvement of existing paths; (*b*) improvement of road junctions with the main road, for the C.C. County Surveyor, Shire Hall, Gloucester. Deposit £1 1s.

OCTOBER 3.—**Gunthorpe.**—ROADS.—4,500 lineal yards of new approach roads to the proposed bridge at Gunthorpe, for the Notts C.C. J. Cracroft Haller, County Surveyor, Shire Hall, Nottingham. Deposit £5.

OCTOBER 3.—**Haywards Heath.**—SEWERS.—670 lin. yds. of 9 in. stoneware pipe sewers in Park-road and Warden-avenue, for the U.D.C. G. Plummer, engineer and surveyor.

OCTOBER 5.—**Anglesey.**—ROADS.—Construction of new lengths of roads (diversions) for road widening and improvements on sections of the Coastal main road, for the C.C. W. E. Jones, County Surveyor, Graig, Llanfair P.G., Anglesey. Deposit £3 3s.

OCTOBER 5.—**East Riding.**—RECONSTRUCTION.—Widening, strengthening and resurfacing the trunk road, Hull–Selby road, and for carrying out certain improvements and diversions in connection therewith, and all works incidental thereto, from a point south of the road to Barlby Landing (near Selby) on the Selby-York road, to Booth Ferry-road Junction, near Barnhill-lane (Howden), approximately 6¼ miles, for the C.C. County Surveyor, County Hall, Beverley. Deposit £5 5s.

OCTOBER 5.—**Gellygaer.**—ROADS.—Excavation and filling (about 20,000 cub. yds.), ballasting, road-making, kerbing, channelling, and fencing for the approaches to the ferro-concrete bridge in course of construction (Ystrad Mynach to Gilfach), for the U.D.C. F. Read, Engineer and Surveyor. Deposit £2 2s.

OCTOBER 5.—**Leicester.**—MAINS.—Laying of rising mains, 44 in. diameter, 33 in. diameter, 27 in. diameter, 24 in. diameter, 20 in. diameter, 10 in. diameter, and 6 in. diameter, together with all special bends, tees, angle branches, &c., the assembling and fixing of sluice valves, opening and closing gearing and electric motors where required, the construction and completion of valve chambers, &c., and all other works in connection therewith, for the T.C. E. G. Mawbey, City Engineer and Surveyor. Deposit £5.

OCTOBER 5.—**Looe.**—MAINS.—Laying of 12 miles of 8 in. iron water mains, 1 mile of 6 in. iron water mains, and the construction of a reinforced concrete service reservoir to contain half a million gallons of water, and other works, for the U.D.C. G. H. Ivory, A.M.I.C.E. Deposit £3 3s.

OCTOBER 6.—**Maldens and Coombe.**—MAKING-UP.—For (1) making-up the carriageway with reinforced concrete and maintaining St. John's-road, New Malden; (2) paving with artificial stone slabs the footways in St. Johns-road, New Malden, for the U.D.C. R. H. Jeffes, Engineer and Surveyor. Deposit £1 1s. each.

OCTOBER 6.—**Spalding.**—SEWERS.—Supplying and laying of about 21,230 lineal yds. of 12 in., 9 in., and 6 in. stoneware pipe sewers, together with manholes and appurtenant works, for the U.D.C. C. Franklin Murphy, chartered civil engineer, Lloyds Bank Chambers, Morpeth. Deposit £5.

OCTOBER 7.—**Birmingham.**—SEWERS.—Construction of about 395 yds. brick and concrete culvert, and 398 yds. stoneware pipe sewers, together with incidental works in Long Acre and adjacent lands, for the T.C. Herbert H. Humphries, City Engineer and Surveyor. Deposit £2.

OCTOBER 9.—**Wemyss.**—PIPES.—Supplying and laying about three miles of cast-iron pipes of diameter 15 in., together with sluice valves, &c., and including the construction of incidental and relative works, for the Wemyss and District Waterworks Board. Crouch & Hogg, Chartered Civil Engineers, 17, Lynedoch-street, Glasgow. Deposit £2 2s.

OCTOBER 10.—**Aberystwyth.**—MAINS.—Provision and laying and jointing of water mains at Aberystwyth, together with all necessary special fittings, for the Council. H. B. Ward, Chartered Civil Engineer, Commerce Chambers, 15, Lord-street, Liverpool. Deposit £3 3s.

OCTOBER 12.—**Letchworth.**—EXTENSIONS.—To the main drainage system, for the U.D.C. H. Humphreys & Sons, Consulting Engineers, 28, Victoria-street, Westminster. Deposit £2 2s.

OCTOBER 12.—**Skegby.**—SEWERS.—Construction of about 4,765 yards of stoneware and iron pipe sewers varying in size from 7 in. to 12 in. diameter, with manholes and all appurtenant works, and the erection of detritus pits, Dortmund tanks, mud drying beds, and other sundry works, for the R.D.C. W. H. Radford & Son, Chartered Civil Engineers, Albion Chambers, King-street, Nottingham. Deposit £3 3s.

OCTOBER 15.—**Great Ouseburn.**—SEWERS.—Construction of about 6,000 lin. yds. of pipe sewers, varying in size from 9 in. to 18 in. diameter, together with manholes and other works, in the parish of Acomb, for the R.D.C. E. J. Silcock, engineer, 25, Victoria-street, Westminster, S.W.1. Deposit £5.

OCTOBER 16.—**Rushcliffe.**—SEWER.—533 yds. of 9 in. and 6 in. sewer and manholes from Watnall-road to the Hospital site, Hucknall, for the Hospital Committee. E. W. Bostock, Architect to the Committee, Council Offices, Watnall-road, Hucknall.

OCTOBER 20.—**Nesscliff.**—WIDENING.—Road widening for a length of approximately 2,000 yards, including drainage, setting back of farm buildings and contingent works, at Nesscliff, about 8 miles from Shrewsbury, for the Salop C.C. W. H. Butler, County Surveyor, County Buildings, Shrewsbury. Deposit £5 5s.

NO DATE.—**Howth.**—ROAD.—Section of concrete road, for the U.D.C. F. Higginbotham, surveyor, 24, Nassau-street.

NO DATE.—**Wakefield.**—KERBING.—Kerbing in natural stone, soiling to verges and open spaces, the formation of the carriageways and footpaths in tarred

slag, and the incidental works required to be done to complete the roads on the Portobello estate, for the T.C. P. Morris, Housing Architect and Town Planning Surveyor. Deposit £2.

Competitions.

(*See Competition News, page* 452.)

Auction Sales, Tenders, etc.

SEPTEMBER 29.—**London, N.W.**—Ernest Owers, Ltd., will sell: (*a*) Edgware, a building estate; (*b*) Child's Hill, Hampstead, two freehold sites; (*c*) Church End, Finchley main road, freehold site. Auctioneers, Estate Offices, Golders Green, N.W.

SEPTEMBER 25.—**Sampford, Essex.**—Veryard & Yates, Norwood-road, S.E.27, the following sales (without reserve) will be held as stated below: Sampford Hall, Little Sampford, Essex, timber and building material arising from demolition of the mansion.

SEPTEMBER 29.—**London, S.W.**—255, Clapham-road, S.W., stock of excellent timber and building materials.

✱ SEPTEMBER 29.—**London, S.E.**—Joseph Hibbard & Sons will sell, without reserve, by order of the owners to clear the premises, upon the premises, Vauxhall, S.E. (close to Vauxhall Station, Southern Railway), the remaining plant and stock of sawmills and box makers, including 13 A.C. electric motors. Auctioneers, 15, Newington Green, Islington, N.16.

SEPTEMBER 30.—**Birmingham.**—Solihull House, Solihull, building materials, arising from demolition of the mansion. Auctioneers as above.

OCTOBER 1.—**Kent.**—Fuller, Horsey, Sons & Cassell will sell in lots, on the premises, late Johnson Tile Works, Queenborough, Kent, materials of the buildings, all lots taken down and stacked ready for removal. Auctioneers, 11, Billiter-square, E.C.3.

OCTOBER 1.—**London, E.**—Joseph Hibbard & Sons (in conjunction with W. W. Howard Bros. & Co.) will sell, by order of the Governments of India and Burma, and others, without reserve, upon the premises at Commercial Wharf, Canning Town, stock of hardwoods (the whole catalogue is composed of dry stocks). Auctioneers, Newington Green, Islington, London, N. 16.

OCTOBER 6–10.—**Newmarket.**—Perry & Phillips will sell, on the premises, Cheveley Mansion, near Newmarket, the whole of the interior and exterior fittings. The fabric of the mansion will be sold for demolition. Auctioneers, 59, High-street, Bridgnorth.

OCTOBER 13.—**London, E.C.3.**—Fuller, Horsey, Sons & Cassell will sell by order of S. Pearson & Son (Contracting Department), Ltd., on completion of the contract for the construction of the Queen Mary Reservoir, at Littleton, near Staines, in lots, at the Merchants' Hall, Baltic Exchange, St. Mary Axe, E.C.3, contractors' plant and machinery. Auctioneers, 11, Billiter-square, E.C.2.

✱ OCTOBER 20.—**Middlesex.**—Hampton & Son will sell, by order of the mortgagees, at the St. James's-Estate Rooms, St. James's-square, S.W.1, building estates within a 12 mile radius of Marble Arch, Mill Hill, Middlesex, the Myles down Estate of nearly 48½ acres. Auctioneers, 20, St. James's-square, S.W.1.

DURING OCTOBER.—**Sussex.**—Knight, Frank & Rutley will sell, by direction of Mr Edward Huth, at The Goldings Hotel, Hayward's Heath Station (unless previously disposed of privately as a whole), the freehold residential sporting and building property known as the Wykehurst Park Estate (remaining portions), Bolney, including the Stanley Mansion; also private residence known as "Hazeldean," in all extending to about 380 acres. Auctioneers, 20, Hanover-square, W.1.

Public Appointments.

✱ SEPTEMBER 25.—**Wood Green, London, N.**—Clerk of Works on the erection of houses in connection with the Council's housing scheme (the appointment will be of a temporary nature) by the U.D.C. The Clerk, Town Hall, Wood Green, N.22.

SEPTEMBER 28.—**Lincoln.**—Sanitary Inspector and Building Surveyor required by the Welton R.D.C. W. B. Danby, Clerk to the Council, 2, Bank-street, Lincoln, endorsed "Sanitary Appointments."

SEPTEMBER 28.—**Southampton.**—One Draughtsman (Grade I) required in the County Architect's Department. A. L. Roberts, County Architect, The Castle, Winchester, on receipt of stamped addressed envelope.

SEPTEMBER 30.—**Bengal.**—Architectural Assistant required, under the Bengal Government, by the High Commissioner for India. The Secretary to the High Commissioner for India, 42, Grosvenor-gardens, S.W.1

SEPTEMBER 30.—**Newcastle-upon-Tyne.**—Clerk of Works required for the proposed secondary schools at Heaton. Director of Education, Education Offices, Northumberland-road, Newcastle-upon-Tyne.

✱ OCTOBER 2.—**Lancashire.**—Architectural Draughtsman with experience of modern Secondary School design required by the C.C. County Architect, 16, Ribbersdale-place, Preston.

✱ OCTOBER 8.—**Liverpool.**—Surveying Assistant in the Land Steward and Surveyor's Department required by the Finance Committee of the City of Liverpool. Walter Moon, Town Clerk, Municipal Buildings, Liverpool, endorsed "Application for Surveying Assistant."

✱ OCTOBER 12.—**London, S.E.6.**—Technical Assistant required in the Borough Surveyors' Department by the Metropolitan Borough Council of Lewisham. John W. Shuter, Town Clerk, Town Hall, Catford, S.E.6.

✱ NO DATE.—**Nigeria.**—Inspector of Works (Reinforced Concrete) required by the Government of Nigeria for the Lagos Harbour Works, for one tour of 12 to 18 months' service. Apply at once, Crown Agents for the Colonies, 4, Millbank, Westminster, S.W.1., quoting M/13969.

NEW BUILDINGS IN LONDON.

Acton.—A large motor garage and body-building works is to be erected for Messrs. Stewart & Ardern, Ltd., 103, New Bond-street, W.1. Messrs. H. & J. Taylor, builders, 177, Lewisham-road, S.E.17. Mr. H. W. Langdon, quantity surveyor, 57–58, Chancery-lane, W.C.1. Messrs. H. H. Davis & Partners, architects, 19, Hanover-square, W.1.

Baker-street.—A new block of offices with a bank on the ground floor are to be erected at Nos. 101–103, Baker-street, W.1. Messrs. Bywaters & Son, Ltd., contractors, 10, Kingley-street, Regent-street, W.1. Mr. J. Stanley Beard, architect, Bank House, 52, Baker-street, W.1.

Bromley.—A site for a new school for 1,000 children has been acquired on the Downham housing estate. Mr. Herbert O. Ellis, F.R.I.B.A. (Messrs. Herbert O. Ellis & Clarke), 3, Old Queer-street, S.W.1, architect.

Camberwell.—Upon the large site at rear of Nos. 559–561, Old Kent-road, S.E., a factory will shortly be erected for Messrs. Glover & Webb, Ltd., to the design of Mr. Reginald W. Lone, A.R.I.B.A., 63, Lincoln's Inn Fields, W.C.2. Messrs. Troy & Co., Ltd., of Finchley-road, N.W.3, contractors. Reinforced concrete and structural steelwork by Messrs. Young & Co., 6, Queen Anne's Gate, S.W.1.

Clerkenwell.—The building programme of the Mount Pleasant Post Office on the site of the old Coldbath Fields Prison, includes the erection of a second large structure, in addition to the one now being built, and the construction of a staff block. The contractors for the first building are Messrs. Galbraith Bros., 63, Waterloo-street, S.E.5. Plans by H.M. Office of Works, Storey's Gate, S.W.1.

Croydon.—1,000 houses are to be built on the Coulsdon Court estate. Messrs. Trehearne & Norman, architects, Windsor House, Kingsway, W.C.2.

Deptford.—A laundry is to be erected in conjunction with the new baths and hall in Evelyn-street, North Deptford. Messrs. A. W. S. & K. M. B. Cross, architects, 45–46, New Bond-street, W.1. Messrs. Rualt & Young, quantity surveyors, 17, Southampton-street, W.C.1. Messrs. Wylie & Lochhead, Ltd., contractors, 45, Buchanan-street, Glasgow.

Edgware.—A large hospital-infirmary is to be erected for the Hendon Board of Guardians, to accommodate 500 beds. Messrs. Paine & Hobday, architects, 45, Bedford-row, W.C.1. Messrs. John Leaming & Sons, quantity surveyors, 28, John-street, Bedford-row, W.C.1. Messrs. Dolby & Williamson, consulting engineers, 8, Princes-street, Westminster, S.W.

Euston-road.—£100,000 is being raised for new wards and operating theatres at the Elizabeth Garrett Anderson Hospital for Women, on which building is to commence this winter under the hon. architect, Sir Brumwell Thomas, F.3, The Albany, Piccadilly, W.1.

Fetter-lane.—New offices are to be erected to plans by Messrs. Herbert O. Ellis & Clarke, 3, Old Queen-street, S.W.1. Messrs. Killby & Gayford, Ltd., builders, 87, Worship-street, E.C.2.

Gray's Inn-road.—It is proposed to build a new outpatients' department and a ward block of 30 beds at a cost of £35,000, at the Central London Throat, Nose and Ear Hospital. Messrs. Young & Hall, architects, 17, Southampton-street, W.C.

Greenwich.—Plans for a new school on the Charlton Housing Estate, to accommodate 264 scholars, and costing £13,000, have been prepared by Mr. G. Topham Forrest, F.R.I.B.A., County Hall, S.E.1.

Hammersmith.—A large group of tenement buildings are to be erected on an estate at Hammersmith, W., acquired by the Trustees of the Peabody Donation Fund. There will be 33 blocks of five stories each, together with 58 cottages of five rooms each. Messrs. Walter Lawrence & Son, Ltd., contractors, 19, Finsbury-square, E.C.2. Mr. Victor Wilkins, F.R.I.B.A., Trustees' architect, 12, York Buildings, Adelphi, W.C.

Hampstead.—It is proposed to extend the Hampstead Garden Suburb Institute at Central-square, N.W.11, at a cost of £30,000. Elevations by Sir Edwin Lutyens, R.A., 17, Queen Anne's Gate, Westminster, S.W.1. Internal planning by Mr. C. E. Hanscomb, F.R.I.B.A., Station-approach, Sanderstead.

Hanwell.—The Great Western Land Co., Ltd., are to carry out an estate developing proposal involving about 100 houses. Mr. R. H. C. Churchward, architect, 92, Victoria-street, S.W.1.

Isleworth.—Messrs. Watney, Combe, Reid & Co., Ltd., have made an application to erect a public house in Syon-lane. Messrs. F. J. Fisher & Son, architects, 38, Bloomsbury-square, W.C.1.

Islington.—Plans have been approved for the erection of a new elementary school on the Drayton Park site, to accommodate 504 children. The cost is estimated by the architect, Mr. G. Topham Forrest, F.R.I.B.A., at £21,758, including furniture.

Kensington.—Funds are rapidly accumulating towards the £80,000 total required to build the proposed Princess Louise Kensington Hospital for Children, at St. Quinton-avenue, W. Messrs. George A. Lansdowne, F.R.I.B.A., 9, Regent-street, W.1, and J. T. Saunders, F.R.I.B.A., 1A, Linden-gardens, W.2, architects.

Ludgate Circus.—Nos. 22–24, Bride-lane, and 2–7, Bride-court, E.C.4, are to be pulled down to make room for an extension of the branch restaurant in Ludgate Circus, E.C., of Messrs. Joseph Lyons & Co., Ltd., caterers. Plans by the Company's architect.

Mortimer-street.—Plans are being completed for the carrying out of the first section of rebuilding of the Middlesex Hospital in Mortimer-street, W.1, the total cost of which is estimated at £500,000. Mr. A. W. Hall, F.R.I.B.A., architect (Messrs. Young & Hall), 17, Southampton-street, W.C.1.

Oxford-street.—Messrs. Horne Bros., Ltd., outfitters, are to erect a new branch showroom, with four floors of offices above, at the junction of Oxford-street and Duke-street, W.1. Messrs. Higgs & Hill, Ltd., contractors, Crown Works, South Lambeth-road, S.W.8. Messrs. Edmund Wimperis & Simpson, architects, 61, South Molton-street, W.1.

Rotherhithe.—A steel frame building with a 5-ton electric traveller is about to be erected by Messrs. Young & Co., 6, Queen Anne's Gate, S.W.1, for Messrs. H. J. Enthoven & Sons, at Upper Ordnance Wharf, Rotherhithe, S.E.16.

St. Paul's Churchyard.—New premises for the Dolcis Shoe Co., of Great Dover-street, S.E.1, are being erected in St. Paul's Churchyard, E.C.4. Messrs. F. D. Huntington, Ltd., contractors, 11, Hanover-square, W.1. Mr. W. Henry White, F.R.I.B.A., architect, 14A, Cavendish-street, W.1.

Tokenhouse-yard.—Steelwork is being erected for the building to be erected in Tokenhouse-yard, E.C.2, for the Bank of England, for use during the rebuilding of their main premises. Messrs. F. G. Minter, Ltd., builders, Ferry Works, Putney, S.W. Mr. F. W. Troup, architect, 14, Gray's Inn-square, W.C.1.

Victoria-street.—The projected programme of rebuilding and improvements proposed by the directors of the Army & Navy Co-operative Society, Ltd., to their premises in Victoria-street, S.W.1, Artillery-row, S.W.1, Howick-place and Francis-street, S.W.1, is reported to involve considerably over £250,000. Sir Aston Webb & Son, architects, 19, Queen Anne's Gate, S.W.1.

Westminster.—Plans are being prepared by Messrs. Ashley & Newman, F.R.I.B.A., 14, Gray's Inn-square, W.C., for the erection of a block of tenement buildings, for the Westminster C.C., on a site of 17,444 sq. ft. in Esher-street, Page-street, and Vincent-street, S.W.1.

PROPOSED NEW BUILDINGS & OTHER WORKS*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced. Abbreviations: T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; B.C. for Borough Council; P.C. for Parish Council; M.H. for Ministry of Health; M.T. for Ministry of Transport; C.B. for County Borough; B.E. for Board of Education; M.A.B. for Metropolitan Asylums Board; and M.W.B. for Metropolitan Water Board.

ABINGDON.—The R.D.C. are to erect 40 houses.

BARKING.—The E.C. has been informed by the B.E. that they are prepared to approve the plans for the erection of "The Park" central school at an estimated cost of £40,000. The school will accommodate 320 boys and 320 girls.

BARNSLEY.—The M.H. has given formal sanction to the C.B. for borrowing £14,157, for the erection of a public elementary school at Wilthorpe.—The Housing Committee recommended that application be made to the M.H. for sanction to subsidise a further 100 houses.

BIGGLESWADE.—The U.D.C. has decided to build 41 more houses on the Townfield estate.

BLACKPOOL.—The M.T. has held an inquiry into an application by the Corporation for sanction to borrow £61,482 for the widening and improvement of Newton-drive and St. Walburg's-road, Abingdon-street, Church-street, and Clifton-street; for the purchase of land for the construction of West Park-road: for the purchase of property in Cunliffe-road, for the construction of a new road; for the reconstruction of Bloomfield-road, and for the purchase of land in Bispham-road for the provision of a highway depot.

BLAYDON.—The U.D.C. has decided upon a scheme for the erection of 100 houses by direct labour at Bleach Green, near Winlaton.

BRENTFORD.—The M.H. held an inquiry into the application of the D.C. for approval of proposals for development in connection with the Brentford town-planning scheme.

BRIGG.—The B.G. has decided to adopt a scheme for the accommodation of 19 vagrants, at a cost of about £2,000.

BRIGHTON.—Sanction has been received from the M.H. to the loan for £900 for the erection of a caretaker's house for Balfour-road School.—Proposals by the Surveyor for the fencing of the Girls' Secondary School and playing field have been approved by the Sub-Committee. The work is estimated to cost £484.

CAMBRIDGE.—The T.C. passed plans for six houses in Hawthorn-way, 42 houses in Coleridge-road, eight houses in Milton-road at corner of Hawthorn-way, one pair of semi-detached houses in Newmarket-road, for the Corporation.

CHESTERFIELD.—The E.C. has received sanction from the B.E. for a new girls' school at Highfield-lane, and the M.H. forwarded sanction to the borrowing of £2,800 for the purchase of the site. The new school is to accommodate 300 girl scholars displaced by the condemnation of Whittington Moor Girls' School.—Plans were also provisionally approved for new boys' and girls' schools at Boythorpe, to be erected on land originally purchased by the Corporation for housing.—Official approval was also received to the erection of three additional classrooms at Hasland (Eyre-street) School.

CHIPPENHAM.—The R.D.C. passed plans for a sub-station for Messrs. Edwards & Armstrong, at Corsham.

DERBY.—The M.H. has sanctioned the proposal of the Corporation Housing Committee to provide 250 iron houses in the Osmaston Park-road district.

DROITWICH.—The Market Hall and the dungeons are to be renovated.

DUBLIN.—The County Council has considered plans for the building of 52 four-roomed labourers' cottages in Balrothery Union, and approved of certain types.

DUNMOW.—The R.D.C. has decided to purchase various sites for housing purposes.

EPSOM.—The Epsom Grand Stand Association has had plans prepared showing an entirely new grand stand, capable of accommodating over 20,000 persons.

GELLYGAER.—The U.D.C. has recommended the Surveyor to prepare plans for the new bridge at Tir-y-Berth.

HARROGATE.—The T.C. has decided to apply for sanction to borrow £21,000 for the provision of a new covered pavilion in Valley Gardens, and £2,140 for alterations and extensions at the Bogs Field entrance to the Gardens, including a children's pool.

ILKLEY.—The B.E. has approved the purchase of a site for a secondary school for girls. The site is near the present boys' grammar school, between Bolling-road and Cowpasture-road.

KNUTSFORD.—The U.D.C. has decided to apply to the M.H. for sanction to borrow £61,500 for new sewerage works and sewage outfall in the Mobberley district.

LIMERICK.—A sum of £150,000 has been guaranteed under the Trades Loan Act for carrying out the extension of Limerick docks and the construction of a western entrance.

LINTHWAITE.—The D.C. are to apply to the Public Works Loan Board for a loan of £7,657 for erection of 14 houses.

LONDON (BOW).—The L.C.C. are to erect another school building in Back-alley.

LONDON (CAMBERWELL).—The B.C. has agreed to the L.C.C. scheme for the improvement of housing conditions in the Wyndham-road area.

LONDON (DEPTFORD).—The B.C. has received from the M.H. formal sanction to the borrowing of £3,992 for the provision of an underground convenience at Clifton Hill.—Plans approved: A. W. S. & K. M. B. Cross, 46, New Bond-street, W.1, laundry premises in connection with the new public baths and wash-houses, Evelyn-street, on the north-side of Clyde-street.

LONDON (FINCHLEY).—A proposal is on foot for the erection of a maternity centre at a cost of £7,542.

LONDON (FULHAM).—The B.C. recommend that premises 2 and 3, Munster-mews, be purchased at a cost of £1,250 for electricity sub-station purposes.—The B.G. has asked the M.H. to sanction £800 for extensions to the Infirmary.—The B.C. are to apply for a £23,000 loan for new paving works.

LONDON (HAMMERSMITH).—The B.C. recommend that the Council approve the demolition of the present iron urinal at the north-west corner of Shepherd's Bush Green, and the erection of a brick building for the joint purpose of an electricity sub-station and urinal, at an estimated cost of £948.

LONDON (HENDON).—The M.H. has held an inquiry into the application of the L.C.C. for sanction for an order enabling them to acquire compulsorily an additional area of over 100 acres at Burnt Oak, Hendon, for housing purposes.

LOWESTOFT.—The T.C. recommend that application be made to the M.H. for sanction to a loan of £13,175 for the erection of 31 houses on the Beccles-road housing site.

LYTHAM ST. ANNES.—The M.H. has sanctioned the application of the Corporation for permission to borrow £26,500 for the reconstruction of the Lytham public baths.

NEWPORT.—Although the contract for the building of the Tredegar Arms Hotel, Newport, and premises connected therewith, has not been actually signed, Messrs. John Jenkins (Ltd.), of Newport, have been instructed to proceed with the work.

NORWICH.—The T.C. adopted the recommendations from the E.C. for the erection on the Clare House estate of the proposed new secondary school for girls, prepared by Mr. C. J. Brown, architect. The Council also decided to provide new public elementary schools at (1) the Drayton-road estate; (2) the northern portion of the Earlham housing estate; (3) Colman-road.

NOTTINGHAM.—The M.H. has held an inquiry into the Corporation's application for sanction to borrow £504,000 to erect new municipal buildings, offices, and shops upon the site in the market, in place of the Exchange Hall.—It was stated that new sewerage works are also being planned for the city estimated to cost £750,000.

OLDHAM.—The C.B. resolved that tenders be obtained for the installation of electric light in the Central Hall and end class-rooms of the Mixed Department, with provision for the extension of the system to other classrooms.—The Council also resolved that the plan and estimate be approved of and instructions given for the work to be carried out of fencing in of the land around the public convenience at the junction of West-street and Fletcher-street.—The Council further resolved that the offer of Messrs. L. G. Mouchel & Partners, Ltd., for the preparation of particulars and details of reinforcement required in connection with the piled foundation raft for the new generating station be accepted.—Plans passed: J. Greenhalgh, new assembly hall, Boy Scouts' Headquarters, Albert-street and Victoria-street.

OSWESTRY.—The M.H. held an inquiry into the application of the R.D.C. for sanction to borrow £19,721 for the purpose of carrying out a sewerage and sewage disposal scheme for the village of Gobowen.

OXFORD.—The Finance Committee of the City Council recommend that application be made to the M.H. for sanction to borrow a further sum of £10,000 for small dwellings.

PLYMOUTH.—The C.B. has resolved that the Borough Surveyor be authorised to advertise for tenders for carrying out alterations to the Central Police Station.—The M.H. has sanctioned the borrowing of £30,425 for widening and improvement of Embankment-road.

RAMSGATE.—The T.C. are considering a proposal to acquire an extensive building, formerly known as Fegan's Homes, for the purpose of providing facilities for increased tuition for school children in manual instruction and cooking.

RUGBY.—The M.H. has approved the U.D.C. application for sanction to erect 100 houses on the Eastlands estate.

SELBY.—Plans for the new extensions, estimated to cost £14,000, to the Selby Abbey National Schools have been approved by the U.D.C.

SHREWSBURY.—The Corporation are making plans for the development of the racecourse estate, which they have purchased for a new school, the erection of houses, and for playing fields. A provisional lay-out allots space for over 200 houses.

SOUTHEND-ON-SEA.—The M.H. has sanctioned the loan of £1,693 for the erection of public conveniences in Chalkwell Park for the C.B.

SOUTHSEA.—The Council has passed plans for 114 new houses. The Corporation is considering the question of the development of a new building area at Stamshaw, and it is proposed to erect about 70 working-class dwellings there.

STANLEY.—The U.D.C. has received sanctions from the M.H. for the borrowing of £56,150, £5,250, and £1,250, for the erection of a further 120 houses, with necessary street works and sewers.

SUTTON COLDFIELD.—A proposal is on foot for the erection of a new church near Sutton Coldfield.

TENDRING.—The R.D.C. are to erect 12 houses, 6 at Beaumont, and 6 at Little Holland.

TIVERTON.—The M.H. has approved the R.D.C.'s scheme of 104 houses.

THORNE.—The R.D.C. propose spending £2,000 upon the purchase of Thorne Hall, and its conversion into offices, for which the M.H. have held an inquiry into an application to borrow the money.

WARMLEY.—The Plans and Building Committee recommended the erection of 20 Council houses as follows: Siston and Hanham Abbots, four each; Oldland and Bitton, six each.

WEALDSTONE.—Plans approved by the U.D.C. included the development of the Bonnersfield estate on extensive lines. No fewer than 214 houses were approved for erection by Mr. J. F. Langer.

WESTCLIFF.—A proposal for the construction of a pier on Chalkwell-esplanade, has been submitted to the Southend Corporation. The plans provide for a palm court, refreshment room, ball room, pavilion and concert hall, band pavilion, and Badminton courts, together with a floating landing-stage for the use of yachtsmen and bathers. The concert hall and band pavilion will each provide accommodation for 1,500 people.

WESTHAMPNETT.—The R.D.C. has approved the erection of 24 more houses on sites at Yarbrook and East Lavant.

WEST HYDE.—The Watford R.D.C. are to build 16 houses near Maple Cross.

WIGAN.—The Council are negotiating for a site for a school at Pemberton.—The Mining and Technical College are proposing extensions to their premises. No architect has yet been appointed to prepare the necessary plans.—The parishioners of St. Andrews are proposing the erection of a Sunday school and mission church on a site in Netherby-road.

WILLESDEN.—A new ward is to be built at the General Hospital, Harlesden-road.

WOLVERHAMPTON.—The Staffordshire Local E.C. intends to provide a new public elementary school for about 900 children on the new Low Hill housing estate.—Bushbury-lane Council School is to be enlarged to provide accommodation for 300 children.

WREXHAM.—The R.D.C. are to apply to the M.H. for sanction to the borrowing of £87,306 for various schemes of road widening, drainage, and the erection of six houses.

YORK.—The Housing Committee propose to invite tenders for the erection of a further 300 houses of the steel frame type.—The Committee are investigating the possibility of converting Nunthorpe Hall and other houses for letting as flats.—A scheme has been prepared for culverting a portion of Tang Hall Beck at a cost of £5,100.—The Estates Committee are to convert premises in Parliament-street lately occupied by the Post Office as a telephone exchange, into offices, at a cost of £1,080.—The Estates Committee are considering a suggestion from the British Music Society as to the necessity for the provision of a concert hall.—The City Council has decided to apply to the M.H. for approval for tenders for the erection of upwards of 300 houses of the steel frame type. The Housing Committee has also decided to build four "all electric" houses.

FIRE.

BISHOP'S STORTFORD.—Damage estimated at over £30,000 was caused by a fire at a large timber yard and sawmills.

THE "HENDERSON" SYSTEM

SLIDING DOOR GEAR

FOR FACTORIES, GARAGES, SCHOOLS, ETC.

"TANGENT JUNIOR" FOR LIGHT DOORS.
"TANGENT SENIOR" FOR HEAVY DOORS.

WRITE FOR BOUND CATALOGUE B.24 TO:-

P.C. HENDERSON, LIMITED.

BARKING, ESSEX. PHONE: EAST HAM 287.

* See also our List of Contracts, Competitions, etc.

PRICES CURRENT OF MATERIALS

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.—Ed.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge.

	£ s. d.
Best Stocks	4 3 6
Second Hard Stocks	3 18 6

Per 1,000. Delivered at London Goods Stations.

	£ s. d.
Flettons, at King's Cross	2 13 3
Do. grooved for plaster	2 15 3
Do. Bullnose	3 8 3
Best Stourbridge Fire brick:—	
2½ in.	8 11 0
3 in.	10 3 0

GLAZED BRICKS—

	£ s. d.
Best White Ivory, and Salt Glazed Stretchers	21 10 0
Headers	21 0 0
Quoins, Bullnose and 4½ in Flats	28 0 0
Best Blue Pressed Staffs	9 5 0
Do. Bullnose	9 15 0
Blue Wire Cuts	7 5 0
D'ble Str'tch'rs	30 0 0
D'ble Headers	27 0 0
One Side and two Ends	31 0 0
Two Sides and one End	32 0 0
Splays and Squints	29 10 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s. extra over white.

BREEZE CONCRETE SLABS.

Delivered London

	s. d.		s. d.
2in. per yd. super	1 11	3 in. per yd. super	2 9
2½ in. "	2 4	4 in. "	3 6

	s. d.		
Thames Ballast	10 6	per yd.	delivered 2 miles radius Paddington.
Pit Sand	13 9	"	
Thames Sand	14 6	"	
Best Washed Sand	14 6	"	
¾ in. Shingle for Ferro-Concrete	12 9	" "	
½ in. "	14 0	" "	
¾ in. Broken Brick"	11 6	" "	
Pan Breeze	7 6	" "	

Per ton delivered in London area in full van loads.

Best Portland Cement. British Standard Specification. Test £2 18 0 to £3 3 6 51s. alongside at Vauxhall in 80-ton lots.	
Ferrocrete per ton extra on above	0 10 0
Super Cement (Waterproof)	4 8 0
Roman Cement	8 15 0
Parian Cement	5 15 0
Keene's Cement, White	5 15 0
" " Pink	5 10 0
Plaster, Coarse, Pink	3 0 0
" " White	3 12 6
" Fine	5 12 0
Sirapite, Coarse	3 9 0
" Finish	3 17 0
Grey Stone Lime	2 11 9
Chalk Lime	2 11 9
Best Ground Blue Lias Lime	2 4 6
Hair	32 0 0
Granite Chippings	1 12 0

NOTE.—Sacks are charged 1s. 9d. each and credited 1s. 6d. if returned in good condition within three months, carr. pd.

Stourbridge Fireclay in s'cks 35s. 0d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	2 9½
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	2 11½
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L. & S.W.R., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4
Do. do. delivered on road wagons at above stations, per ft. cube	4 5
White basebed, 3d. per ft. cube extra.	
NOTE.—1d. per ft. cube extra for every foot over 20 ft. *average*, and ½d. beyond 30 ft.	
HOPTON-WOOD STONE—	
Delivered at any Goods Station, London.	
Small random blocks, up to 10 ft. cube, P. ft. cb.	7 0
Random blocks from 10 ft. and over "	17 0
Sawn two sides "	27 0
Sawn three or four sides "	32 0
YORK STONE, BLUE—*Robin Hood Quality.*	
Delivered at any Goods Station, London.	s. d.
6 in. sawn two sides landings to sizes (under 30 ft. super.) Per ft. super	5 6
6 in. rubbed two sides, ditto "	6 0
3 in. sawn two sides slabs (random sizes) "	2 3½
2 in. to 2½ in. sawn one side slabs (random sizes) "	1 6½
1½ in. to 2 in. ditto, ditto "	1 4
HARD YORK—	
Delivered at any Goods Station, London.	
Scappled random blocks Per ft. cube	6 3
6 in. sawn two sides landing to sizes (under 40 ft. super.) Per ft. super	5 1½
6 in. rubbed two sides ditto "	6 1½
4 in. sawn two sides slabs (random sizes) "	2 10
3 in. ditto ditto "	2 1½
2 in. self-faced random flags Per yd. super	9 0

ARTIFICIAL STONE.

Delivered in London Area in full van loads, per ft. cube:—Plain, 6s. 6d.; Moulded, 7s. 9d.; Cills, 8s. 3d.

WOOD.

GOOD BUILDING DEAL.

Inches.	per stan.	Inches.	per stan.
4 × 11	£32 0	3 × 6	£23 0
4 × 9	28 0	3 × 11	28 0
4 × 8	26 0	2 × 11	28 0
4 × 7	25 0	3 × 9	25 0
3 × 8	24 0	2½ × 9	25 0
3 × 7	23 0	3 × 4½	23 0
2½ × 7	22 0	3 × 4	23 0

PLANED BOARDS.

1 × 11	£32 0	1 × 9	£30 0

PLAIN EDGE FLOORING.

Inches.	per sq.	Inches.	per sq.
¾	21/-	1¼	32/6
¾	23/-	1½	37/6
1	25/-		

TONGUED AND GROOVED FLOORING.

Inches.	per sq.	Inches.	per sq.
1	25/-	¾	16/6
1¼	32/6	¾	20/-
1½	37/6	1	25/-

MATCHINGS (BEST).

Inches.	s. d.
¾ × 2	2 6 per 100 ft.

BATTENS.

SAWN LATHS.

Per bundle	0 2 4

1" AND UP THICK.

Dry Austrian Wainscoat, per ft. cube	0 16 0 to 0 18 0
Dry American and/or Japanese Figured Oak, ft. cube	0 15 0 —
Dry American and/or Japanese Plain Oak, ft. cube	0 11 0 to 0 13 0
Dry sq. edged Honduras Mahogany, ft. cube	0 16 0 to 0 18 0
Dry Log cut Honduras Mahogany, ft. cube	0 18 0 to 1 1 0
Dry Cuba Mahogany, ft. cube	1 4 0 to 1 10 0
Dry Teak, ft. cube	0 13 0 to 0 15 0
Dry American Whitewood, ft. cube	0 11 0 to 0 14 0
Best Scotch glue, per cwt.	4 10 0 to —
Liquid Glue, per cwt.	4 7 0 to 5 10 0

SLATES.

1st quality slates from Bangor or Portmadoc carriage paid in full truck loads to London Rate Station. Per 1,000 of 1,200.

	£ s. d.		£ s. d.
24 by 12	37 12 6	18 by 10	21 2 6
22 by 12	34 0 0	18 by 9	18 12 6
22 by 11	31 5 0	16 by 10	17 12 6
20 by 12	29 15 0	16 by 8	13 15 0
20 by 10	25 12 6		

TILES.

	Per 1,000 f.o.r. London.
Best machine-made tiles from Broseley or Staffordshire district	£ 5 12 6
Ditto hand-made ditto	5 17 6
Ornamental ditto	6 2 6
Hip and valley tiles (per dozen) Hand-made	0 9 6
Machine-made	0 9 0

METALS.

JOISTS, GIRDERS, &C., TO LONDON STATION PER TON—

	£ s. d.
R.S. Joists, cut and fitted	13 10 0
Plain Compound Girders	15 10 0
" Stanchions	17 10 0
In Roof Work	20 10 0

MILD STEEL ROUNDS.

To London Station, per ton.

Diameter.	£ s. d.	Diameter.	£ s. d.
¼ in.	12 10 0	⅜ in. to ½ in.	11 5 0
⅜ in.	11 10 0	⅝ in. to 2½ in.	11 0 0

WROUGHT-IRON TUBES AND FITTINGS—

(Discount off List for lot of not less than £7 net value delivered direct from Works, 2½ per cent. less above gross discounts, carriage forward if sent from London Stocks.)

Tubes. Sizes ⅛" to 6"	Fittings. ½" & under.	Fittings. Over ½" to 6"	Flanges. ½" & under.	Flanges. Over ½" to 6"
Black Gas	55 %	47½ %	50 %	57½ %	60 %
Blue Water	50 %	42½ %	45 %	52½ %	55 %
Red Steam	45 %	37½ %	40 %	47½ %	50 %
Galv'd Gas	40 %	37½ %	40 %	47½ %	50 %
" Water	33½ %	32½ %	35 %	42½ %	45 %
" Steam	27½ %	27½ %	30 %	37½ %	40 %

C.I. HALF-ROUND GUTTERS—London Prices, ex Works.

Per yd. in 6 ft. lengths.	Gutters.	Angles and Nozzles.	Stop Ends.
3 in.	1/2½	11½d.	3½d.
3½ in.	1/4	1/0½	3½d.
4 in.	1/5	1/2½	3½d.
4½ in.	1/6½	1/4	4½d.
5 in.	1/9½	1/5½	5½d.

O.G. GUTTERS.

3 in.	1/7	1/3½	3½d.
3½ in.	1/7	1/3½	3½d.
4 in.	1/8½	1/4	3½d.
4½ in.	1/10½	1/6½	4½d.
5 in.	2/3	1/9½	5½d.

RAIN-WATER PIPES, &c.

Per yd. in 6 fts.	Pipe.	Bends, stock angles.	Branches, stock angles.
2 in. plain	1/9½	1/2½	1/8½
2½ in. "	1/11½	1/4	2/0½
3 in. "	2/4½	1/8	2/6
3½ in. "	2/10	2/-	2/10½
4 in. "	3/3	2/4½	3/6

L.C.C. COATED SOIL PIPES—London Prices, ex Works.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles. s. d.
2 in. per yd. in 6fts. plain	2 11	2 3	2 9
2½ in. "	3 5	2 6	3 5
3 in. "	4 1	2 9	4 0½
3½ in. "	4 5½	3 5	4 8½
4 in. "	4 11½	3 9½	5 5½

L.C.C. COATED DRAIN PIPES—London Prices ex Works.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches stock angles. s. d.
3 in. per yd. in 9ft. lengths	4 3	5 9	7 8
4 in. "	6 3	6 11	9 6
5 in. "	7 10	12 0	13 3
6 in. "	9 6	15 0	20 9

Gasken for jointing, 38/6 per cwt.

IRON—	Per ton in London. £ s. d.		£ s. d.
Common Bars	13 10 0	to	14 10 0
Staffordshire Crown Bars—good merchant quality	14 5 0	...	15 5 0
Staffordshire "Marked Bars"	16 10 0	..	18 10 0
Mild Steel Bars	11 0 0	..	12 0 0
Steel Bars, Ferro-Concrete quality, basis price	11 0 0	..	12 0 0
Hoop iron, basis price	16 0 0	..	17 0 0
Galvanised	31 0 0	..	32 0 0
Soft Steel Sheets, Black—			
Ordinary sizes to 20 g.	13 10 0	..	14 10 0
" " " 24 g.	14 10 0	..	15 10 0
" " " 26 g.	16 10 0	..	17 10 0
Sheets Flat Best Soft Steel, C.R. & C.A. quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	19 10 0	..	21 10 0
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 22 g. and 24 g.	21 10 0	..	22 10 0
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 26 g.	23 10 0	..	25 10 0
Flat and Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 9 ft. to 20 g.	18 10 0	..	19 10 0
Ordinary sizes, 6 ft. to 9 ft. to 22 g. and 24 g.	19 0 0	..	20 0 0
Ordinary sizes, 6 ft. to 9 ft. to 26 g.	22 0 0	..	23 0 0
Sheets Galvanised Flat, Best quality—			
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	22 10 0	..	23 10 0
Best Soft Steel Sheets, 22 g. and 24 g.	24 10 0	..	26 10 0
Best Soft Steel Sheets, 26 g.	26 0 0	..	27 0 0
Cut Nails, 3 in. to 6 in. (under 3 in. usual trade extras.)	19 10 0	..	21 0 0

METAL WINDOWS.—Standard sizes, suitable for complete houses, including all fittings, painting two coats, and delivery to job, average price about 1s. 4d. to 1s. 7d per foot super.

LEAD, &c.

(Delivered in London.)	£ s. d.
LEAD—Sheet, English, 4 lb. and up	52 10 0
Pipe in coils	54 0 0
Soil Pipe	56 0 0
Compo pipe	57 0 0

NOTE—Country delivery, 30s. per ton extra; lots under 3 cwt., 3s. per cwt. extra, and over 3 cwt. and under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills per ton	37 10 0	—
Do., ex country, carriage forward per ton	38 10 0	—

COPPER.

		s. d.
Seamless Copper tubes (basis)	per lb.	1 1½
Strong sheet	"	2 3
Thin	"	2 4
Copper nails	"	2 3
Copper wire	"	2 4

PLUMBERS' BRASS WORK.

Delivered in London.

NEW RIVER PATTERN SCREW DOWN BIB COCKS FOR IRON.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
29/-	45/-	76/-	153/-	246/-	510/- per doz.

NEW RIVER PATTERN SCREW DOWN STOP COCKS AND UNIONS.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
41/6	62/-	92/-	174/-	300/-	588/- per doz.

NEW RIVER PATTERN SCREW DOWN MAIN FERRULES.

½ in.	¾ in.	1 in.
39/6	60/-	116/6 per doz.

CAPS AND SCREWS.

1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
7/6	10/-	14/-	23/-	30/-	42/- per doz.

DOUBLE NUT BOILER SCREWS.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
7/6	11/-	17/-	29/-	36/-	63/- per doz.

BRASS SLEEVES.

1¼ in.	2 in.	3 in.	3½ in.	4 in.
10/-	12/-	20/-	24/-	31/- per doz.

NEW RIVER PATTERN CROYDON BALL VALVES, S.F.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.
35/-	56/-	98/-	162/-	228/- per doz.

DRAWN LEAD P. & S. TRAPS WITH BRASS CLEANING SCREW.

	1¼ in.	1½ in.	2 in.	3 in.
8 lbs. P. traps	33/-	41/-	56/-	101/- per doz.
8 lbs. S traps	35/-	45/-	66/-	126/- "

TIN—English Ingots, 2/6 per lb. SOLDER—Plumbers' 1/2, Tinmen's 1/4, Blowpipe 1/5 per lb.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil,	in pipes per gallon	0 3 8
" " "	in barrels "	0 3 10
" " "	in drums "	0 4 1
Boiled " "	in barrels "	0 4 1
" "	in drums "	0 4 4
Turpentine	in barrels "	0 6 10
"	in drums (10 gall.) "	0 7 0
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		60 5 0

GENUINE WHITE LEAD PAINT—"Father Thames," "Nine Elms," "Park," "Supremus," "St. Paul's," "Spedol," "Polacco" and other best brands (in 14 lb. tins) not less than 5 cwt. lots per ton delivered 81 5 0

Red Lead, Dry (packages extra)	per ton	55 0 0
Best Linseed Oil Putty	per cwt.	0 15 0
Filocol	"	0 15 6
Size, XD Quality	fkn.	0 3 6

Continued on next page.

The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

PRICES CURRENT OF MATERIALS (*contd.*)

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

	Per Ft.		Per Ft.
15 oz. fourths ..	3½d.	32 oz. fourths	8½d.
15 „ thirds	4½d.	32 „ thirds	10½d.
21 „ fourths ..	4½d.	Obscured Sheet, 15 oz.	4d.
21 „ thirds	5½d.	„ „ 21 „	5½d.
26 „ fourths ..	5½d.	Fluted 15oz. 6½d., 21oz.	9½d.
26 „ thirds	7½d.	En'lled 15oz. 5½d., 21 oz	7½d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
¼ Rolled plate	4½d.
⅜ Rough rolled	5½d.
½ Rough rolled	5½d.
Figured Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white..	6½d.
Ditto, tinted	9d.
Rolled Sheet	6d.
White Rolled Cathedral	5½d.
Tinted do.	7½d.

Cast Plate is same price as rough rolled.

VARNISHES, &c.

		Per gallon. £ s. d.
Oak Varnish	Outside	0 14 0
Fine ditto	ditto	0 16 0
Fine Copal	ditto	0 18 0
Pale Copal	ditto	1 0 0
Pale Copal Carriage	ditto	1 4 0
Best Ditto	ditto	1 12 0
Floor Varnish	Inside	0 18 0
Fine Pale Paper	ditto	0 18 0
Fine Copal Cabinet	ditto	1 2 6
Fine Copal Flatting	ditto	1 0 6
Hard Drying Oak	ditto	0 18 0
Fine Hard Drying Oak	ditto	0 19 0
Fine Copal Varnish	ditto	1 0 0
Pale ditto	ditto	1 2 0
Best ditto	ditto	1 12 0
Best Japan Gold Size		0 12 6
Best Black Japan		0 10 6
Oak and Mahogany Stain (water).....		0 12 0
Brunswick Black.....		0 7 6
Berlin Black		0 14 6
Knotting (patent)		1 5 0
French and Brush Polish		0 17 0
Liquid Dryers in Terebine.....		0 9 0
Cuirass Black Enamel.....		0 7 0

TRADE NEWS

Paint Post.

We have received the August number of "Paint Post," published by the National Society for the Preservation of Property (by paint and varnish). The N.S.P.P. has three main objectives, viz., to spread the painting business more equally over the whole year and to eliminate the depression in the winter season, to influence councils to pay greater attention to the protection of property, and to direct the attenion of many classes of manufacurers to the importance of paint and varnish as distinct selling assets for manufactured products.

Morris Hoist-blocks.

We have received from Messrs. H. Morris, Ltd., Loughborough, a copy of their latest booklet, illustrating the electrical hoist-blocks and boilers in which they specialise. They claim that their latest machine handles thirty loads at an electrical cost of one penny: at this rate of saving, we should imagine, the initial outlay is soon repaid, while, in addition, the purchaser has the satisfaction of knowing that he has a reliable, lasting and easily handled hoisting service. Those interested should write for Book 81 for full particulars.

Messrs. The Windsor Brick and Tile Co., who specialise in the manufacture of concrete products, announce that they have secured the order for all the red facing bricks and a large quantity of grey bricks for use in the 58 new houses which are to be built for the Windsor Corporation.

Mr. H. G. Blakemore has taken temporary offices at 180, Piccadilly, W.1 (Telephone No.: Gerrard 8263), where he is organising an agency business in connection with machinery, plant and materials of interest to contractors, builders, municipal engineers and quarry owners.

THE SCOTTISH BUILDER

NEW BUILDINGS IN SCOTLAND

Dunbar.—EXTENSIONS.—The Town Council has adopted the scheme by Mr. J. Jamieson, engineer to the Edinburgh Corporation Gas Department, for the development and extension of the gasworks.

Buckie.—HOUSES.—Forty-eight houses are to be erected by the Town Council under the Wheatley Act. Each house is estimated to cost £300, which is claimed to be the cheapest in Scotland.

Rothesay. — IMPROVEMENTS. — The Town Council has agreed upon a scheme of esplanade improvement at the east side of the town between Albert Pier and the point of the shore opposite Glenburn Hydro. The pavement on the seaward side is to be widened and a dwarf retaining wall to be built.

Renfrew.—HOUSES.—The Dean of Guild Court has passed plans for 60 houses in the Moorpark district of Renfrew.

Forres.—BATHS.—The T.C. has decided to instal public baths in Forres House.

Cupar.—ADDITIONS.—The Dean of Guild Court has passed plans for the addition of two cloakrooms to the Sunday School Hall of Cupar St. James's Episcopal Church in Castle-street. Mr. C. Storrar is the architect.

Thornliebank.—HOUSES.—The Calico Printers' Association has just feued three acres of their land in the village to the Upper District Committee of Renfrewshire, who have prepared a scheme for 44 houses.

Dunfermline.—FACTORY.—The Dean of Guild Court has passed plans presented by Messrs. Gessner & Co., Zurich, Switzerland, for the conversion of a store at Castleblair Works, Dunfermline, into a hostel for their employees.

Edinburgh.—VARIOUS.—The Dean of Guild Court passed plans: Edinburgh Association for Women Students' Hostels, for two large hostels in East Craigmillar Park, Suffolk-road; mission church and class-rooms, in Fountainbridge, in connection with St. Cuthbert's Church; James Moncrieff, seven houses at Granton-road; bungalow at Traquair Park, Corstorphine; St. Cuthbert's Episcopal Church Trustees, church hall.

Cupar.—FACTORY.—The Town Council has adopted the proposal of the Anglo-Scottish Beet Sugar Corporation, Ltd., to erect a sugar factory, and resolved to assure the Corporation that they will do everything in their power, by way of providing housing.

Coatbridge.—DAIRY.—The Dean of Guild Court has passed plans for a dairy factory at Dunbeth-road, for the Coatbridge Co-operative Society. The estimated cost of the building is £9,000.

Obituary.

The death occurred at Cambuslea, Ayr, recently, of Mr. J. Bryce, public works contractor, at the age of sixty.

Glasgow Slum Clearances.

Councillor Welsh has given notice to the Housing Committee of the Glasgow Corporation that he will move a motion for the suspension of slum clearance operations, and for proceeding with the building of more houses.

Director of Housing Retires.

Sir J. Walker Smith, the Director of Housing at the Ministry of Health, is to retire at the end of this month, and with his departure the office of Director, which was created in 1919 in order to deal with the acute problems which housing conditions then presented, is to be abolished. His valuable services to the State in this appointment were recognised in the recent birthday honours. Amongst other posts Sir J. Walker Smith has occupied those of City Engineer of Edinburgh, Controller of Housing with the Scottish Board of Health, Government representative on the Board of the Scottish National Housing Company, and consulting engineer to the Scottish Road Board.

It is stated that he has accepted an administrative post in connection with the National Federation of Building Trade Employers.

BUILDING TRADE WAGES IN SCOTLAND.*

THE following are the present rates of wages in the building trade in the principal towns of Scotland. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Brick-layers.	Car-penters, Joiners.	Plas-terers.	Slaters.	Plum-bers.	Painters.	Brick-layers' Masons' Labourers.	Plas-terers' Labourers.
Aberdeen	1/8	1/8½	1/8	1/8	1/8	1/8	1/7	1/0½	
Airdrie	1/8	1/8	1/8	1/8	1/8	—	1/6½	1/3	
Alexandria	1/8	1/8	1/8	1/8	1/8	1/8	—	1/2½ to 1/3½	
Arbroath.....	1/7	1/7	1/7	1/7½	1/7	1/7	1/5½	1/1½	
Ayr	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Bathgate.....	1/8	1/8	1/8	1/8½	1/8	1/8	1/6½	1/2 to 1/3	
Blairgowrie.....	1/7	1/7	1/7	1/7½	1/5	1/7	1/4	10d. to 1/-	
Bo'ness	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Coatbridge	1/8	1/8	1/8	1/8	1/8	—	1/6½	1/3 to 1/3½	
Dumbarton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½	
Dumfries.....	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/2	
Dundee	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Dunfermline	1/8	1/8	1/8	1/9	1/8	1/8	1/8	1/3½	
Edinburgh	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½	
Falkirk	1/7½	1/7½	1/7	1/8	1/7	1/7	1/6½	1/2½	
Fort William	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/2	
Gainshiels	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½	
Glasgow	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½	
Greenock	1/8	1/8	1/8	1/9	1/8	1/8	1/7	1/0½ to 1/3½	
Hamilton	1/8	1/8	1/8	1/9	1/8	1/8	1/6½	1/3½	
Hawick	1/7	1/7	1/7	1/7–1/7½	1/7	1/7	1/7	1/2½	
Helensburgh	1/8	1/8	1/8	1/9	1/8	1/8	1/7	1/3½	
Inverness	1/5	—	1/5	1/4	1/5	1/5	1/4	1/- to 1/2	
Kilmarnock	1/8	1/8	1/8	1/9	1/8	1/8	1/8	1/3½	
Kirkcaldy	1/8	1/8	1/8	1/9	1/8	1/8	1/8	1/3½	
Kirkwall	1/5	1/5	1/4	1/5	1/5	1/4	1/4	1/-	
Lanark	1/8	1/8	1/8	1/9	1/8	1/8	1/6	1/- to 1/3	
Leith	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½	
Motherwell	1/8	1/8	1/8	1/9	1/8	1/8	1/6½	1/3½	
Perth	1/8	1/8	1/8	1/9	1/8	1/8	1/6½	1/3	
Stirling	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½	
Stirlingshire (Eastern District)	1/–1/10	1/–1/10	1/8	1/9	1/7	1/8	1/6½	1/3½	
Wishaw	1/8	1/8	1/8	1/9	1/8	1/8	1/7	1/3½	

* The information given in this table is copyright. The rates of wages in the various towns in England and Wales are given on page 475.

CURRENT PRICES FOR BUILDING WORK IN LONDON*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	11	0
Add if in clay	" "	1	0
Add for every additional depth of 6 ft.	" "	0	6
Planking and strutting to trenches	per foot super	0	5
Do. to sides of excavation, including shoring	" "	1	0

CONCRETOR.

Portland cement concrete in foundation 1 to 6	per yard cube	32	0
Add if in underpinning in short lengths	" "	7	0
Add if in floors 6 in. thick	" "	3	3
Add if in beams	" "	3	9
Add if aggregate 1 : 2 : 4	" "	10	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	" "	2	6

BRICKLAYER.

		£	s.	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	30	0	0
Add if in stocks	"	7	10	0
Add if in Staffordshire blues	"	22	0	0
Add if in Portland cement and sand	"	1	10	0

FACINGS.

Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1½

POINTING.

Neat flat struck or weathered joint	" "	0	0	3

ARCHES.

Extra only to the price of ordinary brickwork :—				
Fair external in half brick rings	" "	0	0	10
Axed in stocks	" "	0	1	9
Rubbed and gauged jointed in putty camber or segmental	" "	0	6	0

SUNDRIES.

Damp course in double course of slates breaking joint and bedded in Portland cement	" "	0	1	0
Setting ordinary register grates and stoves	each	1	0	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	"	4	15	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard sup.	4	3
Three-quarter-inch vertical damp course	" "	8	6
½ inch on flats in two thicknesses	" "	6	3
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	" "	1	2

MASON.

York stone templates fixed	per foot cube	13	0
York stone sills fixed	" "	22	0
Bath stone and all labour fixed	" "	10	6
Portland stone fixed	" "	20	0

SLATER.

Welsh 16 in. × 8 in. 3 in. lap, including nails	per square	72	9
Do. 20 in. × 10 in. Do. Do.	"	80	9
Do. 24 in. × 12 in. Do. Do.	"	90	0

CARPENTER AND JOINER.

Fir framed in plates	per foot cube	5	0
Do. joists	" "	5	6
Do. roofs, floors and partitions	" "	6	0
Do. trusses	" "	8	6

		¾"	1"	1½"	2"
Deal rough close boarding	per sq.	35/6	40/-	45/-	72/-

		s.	d.
Flat centering for concrete floor, including struts or hangers	"	50	0
Do. to beams	per ft. sup.	1	0
Centres for arches	"	1	6
Gutter boards and bearers	"	1	0

FLOORING.

		¾"	1"	1½"	1½"
Deal-edges shot	per sq.		44/6	53/-	60/6
Do. tongued and grooved	"		49/-	57/6	65/-
Do. matchings	"	45/-	51/-		
Moulded skirting, including backings and grounds	per ft. sup.	1/6	1/9	2/0	2/6

SASHES AND FRAMES.

		s.	d.
One-and-a-half moulded sashes or casements	per foot super	1	10
Two Do. Do. Do.	" "	2	1
Add for fitting and fixing	" "	0	3
Deal-cased frames with 1 in. inner and outer linings, 1½ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares double hung, double hung with pulleys, lines and weights; average size	" "	3	9

DOORS.

		1½"	1¾"	2"
Two-panel square framed	per ft. sup.	2/1	2/4	2/6
Four-panel Do.	"	2/5	2/8	2/11
Two-panel moulded both sides	"	2/8	2/11	3/2
Four-panel Do. Do.	"	2/11	3/2	3/5

CARPENTER AND JOINER—continued.

FRAMES.

					s.	d.
Deal wrot moulded and rebated	per foot cube				14	0
		1"	1¼"	1½"		
Plain deal jamb linings framed	per ft. sup.	1/7	1/8	1/11		
Deal shelves and bearers	"	1/4	1/6	1/9		
Add if cross tongued	"	2d.	2d.	2d.		

STAIRCASES.

		1"	1¼"	1½"	2"	2½"
Deal treads and risers in and including rough brackets		2/1	2/4	2/9	—	—
Deal strings wrot on both sides and framed		1/8	2/	2/2	2/8	—

		s.	d.
Housings for steps and risers	each	0	11
Deal balusters, 1 in. × 1¼ in.	per ft. run.	0	9
Mahogany handrail; average 3 in. × 3 in.	" "	6	0
Add if ramped	" "	11	10
Add if wreathed	" "	23	9

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	8½d.	Rim locks	2/-
Sash fasteners	11½d.	Mortice locks	4/3
Casement fasteners	1/5	Patent spring hinges and letting in to floor and	
Casement stays	1/2	making good	19/-
Cupboard locks	1/5		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	16	3
Plain compound girders	"	19	0
Do. stanchions	"	21	9
In roof work	"	27	6

RAIN-WATER GOODS.

		3"	4"	5"	6"
Half-round plain rebated joints	ft. run	1/6	1/9	2/-	2/6
Ogee Do. Do.	"	1/9	2/-	2/6	3/3
Rain-water pipes with ears	"	1/9	2/7		
Extra for shoes and bends	each	4/4	5/11		
Do. stopped ends	"	1/11	2/4½	3/7	4/-
Do. nozzles for inlets	"	2/2	2/7	3/10	4/3

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt.	67	6
Do. Do. in flats	"	66	0
Extra labour and solder in coated cesspools	each	6	9
Welt joint	per ft. run.	0	6
Soldered seam	" "	1	6
Copper nailing	"	0	6

		½"	¾"	1"	1½"	2"	4"
Drawn lead waste	per ft. run	1/2	1/9	2/0	3/4	4/0	
Do. service	"	1/8	2/2	2/7	3/10		
Do. soil	"						6/9
Bends in lead pipe	each					3/3	8/2
Soldered stop ends	"	1/2	1/8	2/1	2/10	3/6	
Red lead joints	"	11d.	1/-	1/3	1/11	2/4	4/13
Wiped soldered joints	"	2/10	3/6	4/-	4/11	6/6	9/9
Lead traps and cleaning screws					14/7	19/6	
Bib cocks and joints		6/4	9/7	15/4	41/-		
Stop cocks and joints		15/4	17/2	25/8	64/-		

PLASTERER.

			s.	d.
Render, float and set in lime and hair	per yard sup.		2	4
Do. Do. Sirapite	"	"	2	7
Do. Do. Keen's	"	"	3	7
Add sawn lathing	"	"	1	7
Add metal lathing	"	"	2	6
Portland cement screed	"	"	2	2
Do. plain face	"	"	3	3
Mouldings in plaster	per 1 girth		0	11
One-and-a-half granolithic pavings	per yard sup.		5	9

GLAZIER.

			s.	d.
21 oz. sheet plain	per foot sup.		0	8½
26 oz. Do.	"	"	1	0
Obscured sheet	"	"	1	1
¼ in. rolled plate	"	"	0	9
¼ in. rough rolled or cast plate	"	"	0	10½
¼ in. wired cast plate	"	"	1	4

PAINTER.

			s.	d.
Preparing and distempering, 2 coats	per yard sup.		0	9
Knotting and priming	"	"	0	7
Plain painting 1 coat	"	"	0	9
Do. 2 coats	"	"	1	2
Do. 3 coats	"	"	1	9
Do. 4 coats	"	"	2	4
Graining	"	"	2	3
Varnishing twice	"	"	1	9
Sizing	"	"	0	3
Flatting	"	"	0	7
Enamel	"	"	1	1
Wax polishing	per foot sup.		0	6
French polishing	"	"	1	2
Preparing for and hanging paper	per piece		2/- to 4/	

*These prices apply to new buildings only. They cover superintendence by foreman and carry a profit of 10% on the prime cost without establishment charges. A percentage of 1½ should be added for Employers' Liability and National Health and Unemployment Acts and 1s. 6d. per £100 for Fire Insurance. The whole of the information given on this page is copyright. Prices include both materials and labour.

NEW COMPANIES

THE particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, of 116 and 118, Chancery-lane, W.C.2, from the documents available at the Companies' Registry.

TIBBENHAM CONSTRUCTION CO., LTD. (207,801). Registered August 10. Builders, contractors, &c. Nominal capital, £10,200.

BASTERFIELDS, LTD. (207,808). Registered August 11. Glass decorative Artists, &c. Nominal capital, £1,500.

ANDERSONS (CHESTERFIELD), LTD. (207,415). Registered July 22. 199, Piccadilly, London, W. Builders, contractors, builders' agents, &c. Nominal capital, £21,000.

HASTINGS ESTATE DEVELOPMENT CORPORATION, LTD. (207,356). Registered July 18. 4, Claremont, Hastings, Sussex. Builders, contractors, &c. Nominal capital, £1,000.

PORTISHEAD BRICK & TILE WORKS, LTD. (207,437). Registered July 22. Brick and Tile Yards, Bristol-road, Portishead, Somerset. Nominal capital, £3,750.

NORTHFIELD SAND & GRAVEL QUARRY, LTD. (207,515). Registered July 25. Dealers in granite, sand, gravel, lime, cement, mortar, &c. Nominal capital, £2,000.

H. THORNTON (BUILDERS), LTD. (207,510). Registered July 25. 112A, West End-lane, West Hampstead, N.W. Builders, contractors, &c. Nominal capital, £500.

CHARLES W. SQUIRE & SON, LTD. (207,529). Registered July 27. Builder and contractor. Nominal capital, £1,000.

FIRWOOD PAINT & VARNISH CO., LTD. (207,861). Registered August 13. 162, Tonge Moor-road, Bolton. Manufacturers of and dealers in paints, varnishes, oils, colours, &c. Nominal capital, £1,000.

LACQUERING, LTD. (207,924). Registered August 17. 95A, Chancery-lane, W.C.2. Painters and decorators, &c. Nominal capital, £1,000.

SAINTY'S, LTD. (207,832). Registered August 12. 53, Doughty-street, John-street, W.C.1. Builders, bricklayers, masons and carpenters, &c. Nominal capital, £250.

WENSELL & SONS, LTD. (207,504). Registered July 24.—2A, Woodberry Down, Finsbury Park, N.4. Building contractor, carried on by E. S. Wensell as "E. S. Wensell & Sons." Nominal capital, £1,500.

DOMINION MALLEABLE, LTD. (207,482). Registered July 24. Etna Works, Rolfe-street, Smethwick. Constructional, consulting and mechanical engineers, iron and steel melters, brassfounders, &c. Nominal capital, £5,000.

FINCH & SONS (ILFORD), LTD. (207,452). Registered July 23. 51, High-road, Ilford. Builders, contractors, &c. Nominal capital, £10,000.

JOHN MIDDLETON, LTD. (207,456). Registered July 23. 38, Bridge-street, Sheffield. Builder and contractor. Nominal capital, £12,000.

J. J. OAKES & SONS, LTD. (208,054). Registered August 25. "Tyn Rhos," Dialstone-lane, Stockport. Builders, land and estate agents, &c. Nominal capital, £3,000.

GOODER & LAPISH, LTD. (208,066). Registered August 26. Joiners, builders and contractors, &c. Nominal capital, £500.

F. R. ABSALOM, LTD. (208,040). Registered August 24. Redlands-lane, Penarth, Glam. Builder, contractor, &c. Nominal capital, £6,000.

WILLIAM WILMOT, LTD. (208,123). Registered August 28. Builders, building contractors, &c. Nominal capital, £5,000.

LLANGYNOG SLATE & SLAB QUARRIES, LTD. (208,092). Registered August 27. To acquire and work any slate or other quarries. Nominal capital, £1,000.

SAND-LIME & ARTIFICIAL STONE INDUSTRIES, LTD. (207,983). Parliament Mansions Victoria-street, S.W.1 (Registered August 20). Specialists for the development of the sand-lime brick and artificial stone industries, &c. Nominal capital, £1,000.

TENDERS

Communications for insertion under this heading should be addressed to "The Editor," and must reach him not later than Tuesday evening.

*** Denotes *accepted*. † Denotes *provisionally accepted*.**
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.

ASHWELLTHORPE.—Police cottage at Ashwellthorpe, for the Norfolk C.C. Messrs. A. F. Scott & Sons, architects, 24, Castle Meadow, Norwich :—

R. G. Carter, Drayton	£628 11 6
E. J. Smith, Bunwell	580 0 0
—. Barrett, Swardeston	576 16 0
H. C. Tofts, Hingham	566 17 6
Pearson Bros., Diss	550 9 5
*H. Bidewell, Wymondham	520 0 0

BARNSLEY.—Stonework in connection with the new entrance gates to Locke Park, for the C.B. :—

*Greetland Quarries	£278

BARNSLEY.—Sub-stations in Sheffield-road and Dodworth-road, for the C.B. :—

*G. Haigh & Sons	£418 and £305

BLACKPOOL.—Adaptation and equipment of rooms in the Town Hall and Municipal Buildings, for administrative purposes, for the T.C. :—

*H. H. Vickers & Son.	

BRIGHTON.—Installing electric lighting‡ in the Corporation Depot, Hollingdean-road, for the C.B. :—

C. B. Pennifold	£257
J. Taylor	250
R. Garrett	236
Page & Miles, Ltd.	222
*Bostel Bros., Ltd.	184

(All of Brighton.)

BRIGHTON.—Caretaker's house at the new Secondary School, for the C.B. :—

Limpus & Son, Kingston-on-Thames	£1,250
Saunders, Brighton	1,167
Field & Cox, Brighton	1,157
Barnes & Sons, Brighton	1,152
H. J. Penfold, Brighton	1,137
A. Monk, Lower Edmonton	1,098
Braybon & Son, Brighton	1,065
*W. R. Andrews & Co., Peacehaven	1,032

CLAYGATE.—Ten houses, for the Esher and Dittons U.D.C. :—

*Durnfords, Ltd.	£3,537 2 7

COALVILLE.—Seventy-six non-parlour type houses, for the U.D.C. :—

*J. E. Jervis, Ltd., Long Eaton	£35,954

DERBY.—200 iron houses, for the T.C. :—

*Newton, Chambers & Co., Ltd., Thorncliffe—	£425 per house

EDINBURGH.—288 houses at Gorgie, for the T.C. :—

*J. Hardie & Son	£114,000

ESHER.—Six houses, for the Esher and Dittons U.D.C. :—

*Milham Bros.	£2,129 19 2

GELLYGAER.—Underground convenience at Bargoed, for the U.D.C. Mr. F. Reed, engineer and surveyor, Hengoed, near Cardiff :—

*W. Blackburn, Treharris	£1,796 11 2

GREAT BOOKHAM.—Residence for Miss B. R. Cooper, at Lower-road :—

*Pearce Annetts & Sons, Great Bookham.	

HASSOCKS.—Villa for Mr. W. McLean, Clayton-avenue. Mr. A. J. McLean, A.R.I.B.A., architect, Molesworth House, 3, Palace-place, Castle-square, Brighton :—

F. W. Honour	£1,325 0 0
Fowler Bros.	1,273 0 0
T. & H. Bartlett	1,190 0 0
T. White	1,163 0 0
F. T. Wilson & Sons	1,144 0 0
Gates & Sons	1,118 0 0
*W. Pooley & Son	946 12 11
Architect's estimate	925 0 0

HASSOCKS.—Villa for Mrs. A. M. Jenner, Clayton-avenue. Mr. A. J. McLean, A.R.I.B.A., architect and surveyor, Molesworth House, 3, Palace-place, Castle-square, Brighton :—

F. W. Honour	£1,525 0
Fowler Bros.	1,358 0
F. T. Wilson & Sons	1,352 0
T. White	1,289 0
T. & H. Bartlett	1,270 0
Gates & Sons	1,182 10
*W. Pooley & Son, Burgess Hill	1,067 0
Architect's estimate	1,075 0

HULL.—V.D. Clinic in Mill-street, for the Corporation. Mr. J. H. Hirst, City Architect, architect. Quantities by Messrs. John Watson Carter, Bowlalley-lane :—

*A. E. Jones (Hull), Ltd., Hull	£5,675

Subject to sanction of the M.H.

INVERNESS-SHIRE.—Reconstruction of Findhorn and Spey bridges, for the C.C. Chief engineer, 98, Academy-street, Inverness; consulting engineer, Sir E. Owen Williams, 5, St. George's-road, S.W.1; consulting architects, Sir J. W. Simpson and Mr. Maxwell Ayrton, 3, Verulam-buildings, Gray's Inn, W.C.1 :—

*Sir Robert McAlpine & Sons, Glasgow.	

LONDON.—Repairing and redecorating walls of main staircase at Municipal Offices, for the Islington B.C. :—

Martyn & Co., Ltd.	£548 15 0
F. de Jong & Co., Ltd.	157 16 5
*J. C. Mather	148 0 0

(All of London.)

LONDON.—Decorating certain offices and corridors at the Municipal Offices, for the Islington B.C. :—

G. S. Stevens	£256 0
J. C. Mather	199 0
F. de Jong & Co.	168 5
Randall & Sons	156 17
J. Johnson	155 0
*A. Cheetham	115 0

(All of London.)

LONDON.—Shelter for motors, cycles, perambulators, &c., in the yard of the Municipal Offices, for the Islington B.C. :—

A. Cheetham	£531 4 6
A. C. Mackinlay	512 2 0
J. C. Mather	402 10 0
*J. Johnson	398 0 0

LONDON.—Demolition of part of the wharf-keeper's cottage at Chancellor's Wharf to allow of the construction of a new pump house, and also the erection of a new cottage together with various other incidental works, for the Hammersmith B.C. :—

A. H. Inns, Ltd.	£1,887
W. Cooper & Son	1,844

(All of London.)

LONDON.—Repairs to the stonework at the Passmore Edwards Library, for the Hammersmith B.C. :—

W. Whiteley, Ltd.	£634 0
Taylor Bros.	586 0
Stone & Marble Co.	497 0
‡W. Tomes	385 0
A. Dreyfus, Ltd.	374 0
W. J. Bourne	297 16
Marvello Co., Ltd.	160 11

(All of London.)

LONDON.—Re-building 15-17, Praed-street, W., for Messrs. Curtis's Furnishing Stores, Ltd. Mr. A. Spiers, architect; Mr. Horace W. Langdon, F.S.I., quantity surveyor :—

Godson & Sons, Ltd.	£16,323
J. Myring & Co.	16,013
H. & E. Lea, Ltd.	14,876
F. G. Minter, Ltd.	14,444
Holliday & Greenwood, Ltd.	13,989
J. W. Woolnough & Co.	13,955
Bywaters & Sons, Ltd.	13,897
Wm. Harbrow, Ltd.	13,709
Perry Bros.	12,677
H. & J. Taylor	12,667

LONDON.—Pavilion on the Joseph Hood Recreation Ground, Cannon Hill-lane, Merton, for the U.D.C. Mr. G. Jerram, surveyor :—

J. R. George, Merton	£2,235 15 3
Geo. Wood & Sons, Merton	2,197 8 3
J. Burges & Sons, Ltd., Wimbledon	1,981 0 0
Burnand & Pickett, Wallington (Surrey)	1,887 0 0

LONG DITTON.—Eighteen houses, for the Esher and Dittons U.D.C. :—

*Rutherford & Woolford	£6,310

LOWESTOFT.—Thirty-one houses of the non-parlour type, on the Beccles-road housing site, for the T.C. :—

R. A. Evans & Co., Ltd.	£13,500
D. Leighton & Son	13,346
*W. Church	13,175

MILTON.—Two experimental houses at Murston, for the R.D.C. :—

T. Monk & Sons	£998
*C. J. Robertson	850

MONMOUTHSHIRE.—Widening, diverting and straightening the Cardiff-Newport road at the Newport Borough Boundary to Duffryn Corner, a length of 2¼ miles, for the C.C. and the M.T. :—
First portion—

*G. F. Leadbetter, Newport	£38,720

NORFOLK.—(1) School at Walpole St. Andrew Cross Keys; (2) alterations and additions to St. Andrew's Girls' P. school, for the E.C. Mr. C. W. Bullen, architect. Quantities by architect :—

*E. J. Smith, Bunwell	(1) £2,500
	(2) 1,230

OBAN.—Twenty-four houses at Mossfield-drive, for the T.C. Mr. D. Galloway, Burgh Surveyor :—

Roads, drains, fencing—	
*Kenneth MacRae & Sons, Taynuilt	£925 2 9
Excavator and brickwork—	
*J. J. & P. McLachlan, Larbert	4,875 15 0
Carpenter and joiner work—	
*D. McTavish, Connel	2,484 7 6
Painter work—	
*H. Walker & Sons, Oban	168 18 9
Plumber work—	
*D. MacDonald, Oban	997 4 3
Slater and roughcast work—	
*A. J. MacDonald, Oban	944 3 0
Plaster a d cement work—	
*M. MacDonald, Oban	1,070 6 8
Electric lighting work—	
*J. Campbell, Oban	129 12 0

OLDHAM.—Reinforcement of foundation raft for the new generating station, for the C.B. :—
*L. G. Mouchel & Partners, Ltd., London.

OLDHAM.—Reinforcement for concrete arch and by-channel "cut and cover" at Blackstone Edge, for the C.B. :—
*British Reinforced Concrete Engineering Co., Ltd.

OLDHAM.—Excavation and concrete work required in connection with the installation of a petrol pump at the Central Fire Station, for the C.B. :—
*H. Hoggins.

PORTSMOUTH.—New hall and offices for L. P. & H. Lodge of Oddfellows. Messrs. A. E. Cogswell & Sons, architects, Portsmouth :—

Franke, Corke & Co.	£7,210
G. J. Davis & Sons	7,144
A. E. Porter & Son	7,009
Jno. Croad	6,982
E. & A. Sprigings	6,778
John Lay & Co.	6,763
Saml. Salter	6,697
Tanner Bros.	6,595
*Frank J. Privett	6,477

PRESTON.—Re-roofing of the large barn at Freckleton Farm, for the T.C. :—
*L. Titterington £1,333 10

POULTON-LE-FYLDE.—Four houses on the Big Field housing site, Lower Green, for the U.D.C. Mr. E. Prescott, surveyor :—

Leach & Unsworth, Blackpool	£2,229	18	0
H. Priestly, Blackpool	2,201	17	4
H. B. Byram, Poulton-le-Fylde	2,167	10	0
Nutter, Seddon & Co., Blackpool	2,020	9	1
Emery Bros., Poulton-le-Fylde	1,940	3	0
Bentley Bros., Poulton-le-Fylde	1,918	10	0
E. Ellison, Poulton-le-Fylde	1,915	10	9
Atherton Bros., Blackpool	1,906	9	2
†E. Armitage, Poulton-le-Fylde	1,872	0	0

ROTHERHAM.—For (1) Thurcroft sewage disposal works; (2) Leabrook sewage disposal works; and (3) Wentworth sewage works, for the R.D.C. Mr. C. O. Rawstron, engineer and surveyor, Groveroad, Moorgate :—
*A. Swift, Wombwell—

(1)	£12,134	5	8
(2)	1,413	9	6
(3)	177	6	5

ST. ANDREWS.—Fifty houses at St. Mary's-street site, for the T.C. Mr. W. Watson, Burgh Surveyor. Quantities by Mr. O. R. Douglas :—

Builder—	
McDonald & Ross, Methil	£7,937
Joiner—	
Munro & Junor, Uddingston	5,419
Slater—	
Wm. Greig, St. Andrews	1,405
Plumber—	
Wm. Nicol & Sons, Buckhaven	2,580
Plasterer—	
J. McIntosh & Sons, Cupar	2,017
Painter—	
Thos. Lumsden, St. Andrews	596
Glazier—	
Wm. Stephens, St. Andrews	101
Gas Fittings—	
St. Andrews Gas Co., St. Andrews	747
Fencing—	
Wm. Gilchrist, Ladybank	259
Grates—	
A. & W. Ingram, Dundee	505

SELBY.—New Abbey Church Junior School to accommodate 300 children :—
*J. H. Carr & Sons, Selby.

SWANSEA.—New girls' school and improvements to the existing boy's school, for the C.B. :—
‡Griffith Davies & Co., Swansea £70,966 9 7

WAKEFIELD.—For erection of church at Portobello. Mr. W. H. Herbert Marten, Lic.R.I.B.A., architect. Quantities by the Architect :—
*T. Jenkinson & Sons, Ltd., Doncaster £3,534 8 8

WIGAN.—School at Whelley, for the C.B. Mr. R. B. Donald, Borough and Water Engineer :—
*Massey Bros., Wigan.

YIEWSLEY.—Fifty-two houses, for the U.D.C. :—
*A. C. Dean, High Wycombe £27,000

PORTABLE PARQUET DANCE FLOORS
In OAK, or OAK and WALNUT.
For PUBLIC or PRIVATE DANCE ROOMS
As supplied to the leading Hotels, etc.
Write or Phone (Park 1888) for particulars to
TURPIN'S PARQUET FLOORING CO.
25 Notting Hill Gate, London, W.11

J. GLIKSTEN & SON
LIMITED
Specialities in
SEASONED HARDWOODS
MAHOGANY WALNUT
JAPANESE, AMERICAN and WAINSCOT OAK, TEAK, WHITEWOOD, &c.
REGISTERED OFFICE AND WHARF
CARPENTERS RD. STRATFORD
LONDON E.15
Telephone: EAST 3771 (5 lines)
Telegrams GLIKSTEN 'PHONE LONDON

J. J. ETRIDGE, Jr. Ltd
SLATING AND TILING
SLATE MERCHANTS
CONTRACTORS.
Inspections and Reports made on
OLD OR FAULTY ROOFS
in any part of the country.
Telephone: Bishopsgate 1944/5, or write,
Bethnal Green Slate Works,
BETHNAL GREEN, LONDON, E.

HIGH-CLASS
FLOORINGS
of every description in
WOOD BLOCKS. PARQUETRY
SEASONED T. & G. WAINSCOT OAK
TEAK AND MAPLE.
FACTORY AND ROADWAY PAVING
STEVENS & ADAMS
LIMITED
VICTORIA MILL, POINT PLEASANT
WANDSWORTH, S.W.18.
(Phones: Putney 1700 & 2457

FITZPATRICK & SON
Masons and Paviors,
455, OLD FORD ROAD, BOW, E.3
Phone: EAST 4808.
Granite Setts and Kerb (redressed and second-hand), York Paving Spur Stones, Granite Chippings, and Granolithic and Sett Paving.

School & Hospital Stoves
MAKERS OF
WRIGHT'S IMPROVED and also SHORLAND PATENT WARM AIR VENTILATING PATTERNS.
GEO. WRIGHT (LONDON) LIMITED
10, Newman St., Oxford St., London, W.1
Burton Weir Works, Rotherham.

OGILVIE & CO.,
Telephone CLERKENWELL 1886.
Many years connected with the late Firm of W. H. LASCELLES & Co. of Bunhill Row.
Mildmay Works, Mildmay Avenue, Islington, N.
EXPERTS IN HIGH-CLASS JOINERY.
ALTERATIONS AND DECORATIONS. ESTIMATES FREE

Telegrams; 'Frolic, Liverpool' 'Phone 228 Bank
E. B. BURGESS & CO.
6, CASTLE ST., LIVERPOOL.
WOOD BLOCK FLOORING AND PARQUETRY.

Wheatly & Co.,
SPRINGFIELD TILERIES, NEWCASTLE, STAFFS.
'Phone: Newcastle, Staffs, 101. Estd. Over 50 Years.
'Grams: "Wheatly, Trent Vale." Brand: TRITON.
SPECIALITIES.
Rustic, Sand Faced and Hand Pressed Tiles in Blue, Blue Brindled, Red, Light Brindled and Dark Brindled Colours. Extensive stocks held of many varieties of Flooring Quarries, Ridge Tiles, Garden Edging Tiles, Air Bricks, Blue Bricks, Copings, etc., etc.
Price List and Catalogue, or Illustrated Brochure of Roofing Tiles free on demand.
N.B.—ALL our products are Hand-made by the Plastic Process.

HOWELL J. WILLIAMS
Builders Ltd.
High-Class Building and Joinery Work
11/17, BERMONDSEY STREET,
Telephone: HOP 202 LONDON BRIDGE, S.E.1
Builders of very many well-known Banks, Office and Business premises. Our works especially convenient for City Building and fittings.